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Financial Ratios in a Period of Falling Prices

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FINANCIAL RATIOS IN A PERIOD OF
FALLING PRICES

A Thesis Submitted in Partial Fulfillment of
the Requirement for the Degree of
Master of Arts in
Loyola University
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PREFACE

Since 1929 prices have fallen steadily with a result that we are in a world wide depression. It has been said that no period of falling prices since the Civil War has been comparable in degree of decline, and that the only other period at all similar was the period following the War of 1812. That falling prices exert an influence on business conditions admits of little doubt. Falling prices, therefore, must effect financial ratios because they are indicators of business conditions. It is because they are indicators of business conditions, that executives use financial ratios as tools of control. But, in order to see the tendency shown by these indicators of business activity, it is necessary to make a complete analysis of financial ratios. The purpose of this study is to make such an analysis so that management may use these tools of control more effectively.

The writer was fortunate in having access to statistical information which although not entirely adequate, could still be used for the purpose of this problem. All of this information was compiled by the Standard Trade and Securities Service. The figures used in this paper were taken either directly, or indirectly, from this compilation. Although all of the ratios have been verified, some error is bound to be

present where thousands of figures are handled. Where errors in computation would mean errors in conclusion, extraordinary care was taken to check the accuracy of the figures. Conclusions, therefore, are based on facts which the writer believes to be correct.

Mr. E. P. Crossen of the Field Analytical Staff of Standard Statistics Company, Incorporated, has given me information which has been of inestimable value. To him I am deeply indebted. Dr. P. T. Swanish of Loyola University has given me valuable and constant advice, for which I wish to express my deepest appreciation. Mr. Plaister, of Moody's Investment Service, Mr. John L. Sweet, of the Federal Reserve Bank of Chicago, and Reverend Eneas B. Goodwin, of Loyola University, have all given valuable assistance in guiding my thought for which I am very grateful.

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CHAPTER I.

INTRODUCTION.

Financial ratios are merely mathematical proportions showing the relationship between two items in the Balance Sheet; between two items in the Income Statement; or, between two items, one of which is in the Balance Sheet and the other in the Income Statement. "Financial ratios are tools which the financial executive uses to grasp the relationship between items in the comparative financial statements. Principles of finance, practices, and methods evolve out of the experience of business concerns. Within certain limits such experiences assume concrete meaning by an analysis of a comparative balance sheet and statement of profit and loss."¹ It has been the practice to show these ratios from period to period so that an increase in the proportion would show a favorable business trend, while a decrease in the proportion would show an unfavorable trend.

It must be remembered, however, that ratios in themselves are meaningless, and only become expressive when compared with a standard. A standard may be scientifically determined in advance, or it may be merely a history of past occur-

1. Swanish, P. T., "Business Organization and Management." p. 149.

rences. Again, it might simply be arrived at unconsciously.¹
 "The standard may be only a general concept of what is adequate or normal, one gained by the analyst from past experience, or it may be one derived by statistical method from compilations of actual figures."² "A standard from the standpoint of managerial control of a business usually implies a desired method of performing an activity."³

Much confusion arises from the fact that financial standards are not fixed and constant, but are variable. They not only vary from industry to industry, but also vary from year to year. Writers of financial standards and financial ratios continually call the reader's attention to this fact. The variation from industry to industry is due to the difference in the combination of the factors of production. Because of the type of industry, a large amount of fixed capital may be necessary in that industry. In another, the opposite case might appear. Any number of these differences will immediately enter the reader's mind. Again, there may be a variation from year to year, depending on the position of the business cycle. When we are in the upswing, prices will be increasing, profits will be increasing, business will be expanding, and costs will lag behind the selling price. In the downswing of the cycle,

1. Harrison, G. Charter, "Standard Costs." p.3, et seq.

2. Paton, W. S., (Editor) "Accountants' Handbook." pp.77-78.

3. Swanish, P.T., "Business Organization and Management." p. 159.

the opposite tendency appears. That this should have some effect on financial ratios is a mathematical certainty.

Until about 1900, financial analysis was considered as of little importance. But within ten years it had reached the position of being the leading factor in credit analysis. Before 1910, many business men would have refused to furnish financial statements to their bankers. There was, at that time, fear that competitors might gain a knowledge of vital business secrets from the study of financial statements. Today, however, this condition is reversed. This change in attitude has been caused by conditions which have changed the mind of the banker, and circumstances which have altered the thoughts of the business man.

In our economic history, large scale business did not reach any great proportions until about 1880. It was not until 1890 that these units became of great magnitude. Although there had been isolated attempts at consolidation before the Civil War, "it was not until after the panic of 1873 that the movement toward consolidation became noticeable."¹ The banker, in analyzing his credit risks under small organizations, depended on personal contact. But with the increase in size, human relations became more and more impersonal, and, hence, the necessity of financial analysis in order to determine the condition of the customer's business. "It is no longer pos-

1. Faulkner, Harold U., "American Economic History," p. 523.

sible for a banker, especially a city banker, to know his customers intimately, or to maintain constant contact with their affairs."¹ Because business language is expressed in dollars, the measurement of business operations becomes an easy task, provided the proper information has been furnished. It is not necessary for one to be an expert in cotton or wool to judge the conditions of a cotton or wool business. All that is necessary is a comparative balance sheet and profit and loss statement. Bankers realize this, and, consequently, demand the necessary information from their customers.

Circumstances which have altered the opinions of the business man are: increased size of business organizations; growing use of bank loans as permanent working capital; increased utilization of open market financing; government taxation; and, finally, the changed attitude toward business secrecy.²

The increase in the size of the business organization which affected the banker by making for an impersonal relationship was not the only factor. Increased complexity and increased competition contributed their weight. As the exchange system increases in complexity, markets become better and better organized, and competition becomes very active. If a single industry furnishes a certain territory with a particular

1. Meech, Stuart P. and McKinsey, James O., "Controlling the Finances of a Business," p. 315.

2. *ibid.*

product, it can succeed even with haphazard methods. If, instead of one, however, three compete for the purchasing power of consumers in the market for a given product, one industry cannot hope to succeed at the expense of another, all things equal. No longer can the management of the first corporation depend upon tradition and sentiment in attempting to acquire the most efficient combination of the factors. In combining the factors of production, management focuses its attention upon one object - the greatest possible return for the least outlay in cost.

Again, since business men have increased their use of bank loans for permanent working capital, it has become necessary for them to furnish the banker with the proper information. This tendency for information has also been noticeable since the beginning of open market financing on a large scale. Before a business can have its stock listed on the stock exchanges, it must furnish these exchanges comparative balance sheets and income statements of definite form.

Government taxation, in particular, the tax on income, has been also a contributing influence. In order to furnish the government with the proper information, many business men were forced to install or improve accounting systems.

Once an approved accounting system had been installed and accounting reports used, business men realized the necessity of financial analysis. Where before the highest secrecy prevailed, business men then found that financial reports of

others in the same industry could be used profitably. In this manner, cooperation displaced fear and a beginning of scientific analysis was made.

In the early stage of development, analysis lacked the completeness characteristic of its present technique. In consequence of this, analysis was subjected to all sorts of criticism. Conservative bankers attacked the over-emphasis which was invariably placed upon a single ratio, namely, the Current Asset ratio. In his preface, Wall states that the

"Only one true test of credit goodness had been developed - the current ratio. This being a proportion, had a real value as an analytical tool, but very shortly began to lose a large part of its effectiveness for two principal reasons. First, it was open to manipulation by 'window dressing' processes. Second, it was used on a single basis for all industries without any allowance for industry strains. While a department store and a cotton mill operate under entirely different conditions, no change was allowed for a variation in the current ratio. A relationship of two dollars of current assets for each dollar of current liabilities was more or less generally set as a standard of goodness for both."¹

As business units became larger and larger, the impersonality of relationships between borrowers and lenders revealed itself in the development of financial ratios. Today a good banker will not consider acceptance of a borrower's credit until he has made a thorough study of the business of

1. Wall and Dunning. "Ratio Analysis of Financial Statements." p. 9.

his customer. Not only are financial ratios indispensable to the lender, but they are invaluable to the executive as well. Before the business unit became large, the entrepreneur could guide his business without accounting records. With an increase in size came the necessity for definite usable information.

It is usually very difficult to determine when a business is not running as smoothly as it might be unless a complete analysis is made. Suppose that a business unit produces several different products, one of which is being sold at a loss. The business, as a whole, is making a profit but unless a complete analysis is made, the manager will not realize that this product is being sold at a loss. Again, an industry might have too much investment in its inventory. In a period of rising prices this serious mistake will not appear. But in a period of falling prices it will make itself known only after it is too late. Sometimes the organization can be saved in spite of this mistake, but in many cases a receivership is the result. If the manager had been supplied with the proper ratios, he would have been able to detect and control the condition before it became serious.

We have an analogy in a human being. Apparently a man may be in perfect health, but only a complete examination will bring out border-line weaknesses which may subsequently become serious. Any one of a number of organs may be diseased and, unless immediately remedied, will cause serious results. The

person himself may not notice this failing until it has caused serious damage, and, in many cases is beyond repair. However, if checked in its early stages no fatal results would have followed.

The investor is interested in the safety of his principal, and, also in a reasonable return on this principal. For this reason he is interested in the business in which he invests. Since he is interested in the profits of the organization, he will have interests much the same as the executive. His analysis, however, need not have the same depths. In addition, the investor should endeavor to ascertain what a condition of liquidation would bring about. Would his investment be a prior lien, or would it be well down the scale? Are the company's assets confined to fixed assets of a technical nature with little or no liquidating value? How much would he realize on his principal if liquidation were effected?

"Since the interests of the investor are essentially long term, he will place relatively less emphasis on some ratios and more on others. The outstanding example of this difference in emphasis is probably offered by the comparison of current assets and liabilities. The present or prospective investor will give less weight to the current ratio itself than to some others, and he will deem it of minor importance to have a detailed classification of current receivables and current payables, which the credit analyst considers of primary importance. The investor, interested in ratio analysis will stress the relationships disclosing earning powers, dividend payments, and so on."¹

1. Paton, W. A. (Editor) Accountants' Handbook." p.86.
In this discussion these ratios are coded by letters and refer

Because the duties of the executive and the banker are most important, and also because both analyze statements from the managerial point of view, this paper will emphasize those ratios which stress this viewpoint. However, much of this information will be serviceable to the investor.

In attempting to deal with this problem the writer has tried to free himself of all preconceptions. Corporations in this study were selected, not because they showed a favorable or unfavorable trend, but because the required data were accessible. In making a study of this nature one is confronted with a lack of information furnished by many of our large corporations. The two outstanding items which are not included in many financial reports are Depreciation and Gross Income. In discussing this situation the following has been said:

"the majority of corporations - even the majority of those the stocks of which are listed on the New York Stock Exchange - make public no data whatsoever to inform their security holders as to the amount of profit that is appropriated for the depreciation and reserves each year.

to the following:

- D. Rate of earnings on total capital employed.
- E. Rate of earnings on proprietary equity.
- F. Rate of earnings on common stockholders' equity.
- G. Dividend rate on common stockholders' equity.
- H. Rate of earnings retained to total proprietary earnings.
- I. Turnover of all capital.
- N. Number of times fixed charges earned.

The most common method of omission is to merely issue an annual statement reporting income after depreciation or depletion."¹ This, of course, also means that Gross Sales are not reported.

Without these two items a correct and adequate analysis is very difficult. For we not only do not know what percentage of depreciation has been charged, we also cannot determine whether the amount charged has been adequate or inadequate. A concern may show anywhere from a profit to a loss by the manipulation of its depreciation. Again, without Gross Sales we are at a loss in determining how much of the Gross Sales were used up by operating expenses. And since operating expenses are one of the most important items on the Income Statement, we are left as a mariner without a compass. Industrial concerns cannot be accused of manipulating their accounts because they have left out this important information. Many of them neglect this information intentionally, because they fear their competitors will learn some of their business secrets. Nevertheless, the fact still remains that this important information is omitted. These corporations, therefore, which did not furnish the required information were omitted.

The second test applied in the selection of corporations was size and relative importance in a given industry. Obviously, a two million dollar corporation in the automotive

1. Standard Trade and Securities Service, Vol. 49. Aug. 20, 1928. No. 36, p. 15.

industry is relatively of less importance in the automotive field than a two million dollar corporation in the candy industry. An apparent advantage is gained by separating the list into the various types of industries. One industry, for instance, may be required to carry unusually large inventories; another may be required to carry huge investments in fixed assets. For this reason each industry should be studied separately in order to show the trend of that particular type of process. The argument, therefore, that a small unit will have little effect on the total comparisons has little importance when we consider the above reasoning.

Falling prices may mean falling security prices, or falling commodity prices. In the latter sense, they might mean falling wholesale prices or falling retail prices. This paper is concerned only with wholesale commodity prices. In the first place, the falling of security prices would have little direct effect on financial ratios. It is true that they do effect commodity prices after a brief interval, but it is the commodity prices and not the security prices which affect the ratios. In the second place, we find that wholesale commodity prices reflect the trend of business more exactly than do retail commodity prices. The wholesale market is much better organized, and, consequently, is more susceptible to change. Retail markets, on the other hand, are not well organized and are not effected as quickly as are the wholesale markets.

"Retail prices, i. e., the prices that the consumer pays, fluctuate less than wholesale prices. There are several reasons for this.

- (1) The consumer does not follow the market closely and, consequently, does not know of changes in the wholesale market.
- (2) The dealer buys his product in quantities some time ahead of his normal demand.
- (3) Customary prices prevail in certain lines, and variations are made only in even money, or from one customary price to another.
- (4) Convenience commonly dictates that retail prices shall not vary with every fluctuation in wholesale price."¹

Finally, we must distinguish markets in which both buyers and sellers are producers in the ordinary meaning of the word, or at least dealers, from markets in which only the sellers are producers, and dealers and buyers are consumers. The former are called producer's markets, and the latter consumer's markets. The contrast between producer's and consumer's markets is great, even when we limit our examination to consumable goods. Producer's markets are usually better organized, the buyers are more competent to judge the quality of the things they buy, the force of competition is stronger, and the force of custom and habit is weaker than when the consumer is the buyer.² In the third place, reports on wholesale prices are readily obtainable. This is not true of retail prices. My

1. Clark, Fred E., "Principles of Marketing." p.436-437.

2. Garver and Hansen. "Principles of Economics." pp. 83 and 84.

list of corporations, therefore, will include those in which wholesale prices form the major pricing process.

Fluctuations in prices may be due to long run secular trends, or to cyclical trends of the business cycle. In speaking of our history of prices, the following has been said:

"Three large price upheavals are noticeable. The first was coincident with the War of 1812 and the Napoleonic Wars in Europe, the second came with the Civil War, and the third with the great World War. Wars have been major causes of price upheavals. Certain broad trends are noticeable. The general trend was upward from 1790 to 1814. Then there was a long downward trend from 1814 to 1849; then an upward swing from 1849 to 1865, followed by a long downward movement which culminated in 1897. This was followed by an upward movement until 1920."¹

Twice only in the history of our country, therefore, do we find a period of falling prices comparable to our present experience. Those periods were after the War of 1812 and after the Civil War. But no advantage would be gained in studying a period so remote as either of those periods since our present business organization is of much later origin. If we were to study a depression of the past decade, we would find our business organization similar, but we would not find the similarity in the falling prices. This being the case, I have limited my analysis to the years 1926-1927-1928-1929-1930 and 1931. By comparing these six periods, this paper will attempt to point out the relationship between falling prices

1. Garver and Hansen, "Principles of Economics." p.340.

and financial ratios.

A word need be said about Public Utilities. There is no denying that these corporations are very large and that they do furnish the proper information. Yet, they have been purposely left out of my list. Since they represent a special type of pricing process they should form a different type of study. Secondly, these industries have very small inventories, and, as a result, are not affected by falling prices in the same way as industrial concerns. This may be purely an assumption, but as a confirmation of the position I take, I need only refer to the accounting principle for the valuation of inventories.¹ If this principle is adopted, it necessarily follows that a fall in commodity prices will cause a corresponding decrease in inventory value. And a corporation with little or no inventory will, therefore, show a somewhat different trend. Finally, the addition of Public Utilities to the list would merely make a complex problem more complex, and beyond the purpose of such a study as this.

1. According to this principle inventories should be valued at cost or market, whichever is lower.

CHAPTER II.
EFFECT OF FALLING PRICES UPON
FINANCIAL RATIOS.

Falling prices and their accompanying effects are phenonema much talked of, but often misunderstood. Accompanying a falling price level, there is an opposite trend in the increased purchasing power of the dollar. The two are reciprocal. Thus, if the price level is halved, the purchasing power of the dollar is doubled; if the price level is doubled, purchasing power of the dollar is halved. A falling price level may be brought about by a relatively greater decrease in money and credit available than the decrease in its use in the exchange and production of goods and services.

To illustrate, let us assume that before the price level started downward, 1,000 units of money and credit were used and that the volume of goods and services exchanged was 10,000 units. Assume, next, that after the price level falls there is a decline of money and credit to 600 units. Finally, to complete the illustration let us suppose: (1) that the volume of goods and services exchanged decreases to 8,000 units; (2) that the volume of goods and services exchanged remains at 10,000 units; and (3) that the volume of goods and services exchanged increases to 12,000 units. Under the original conditions the price level would be 1,000 units (volume of

goods and services exchanged) or .10. After the declining price level, we would have the following conditions accordingly as our assumption. In the first case the price level would be 600 units divided by 8,000 units, or .075. Under the second assumption the price level would be 600 units divided by 10,000 units, or .06. Finally, under the last assumption, 600 units divided by 12,000 units, or .05 would represent the price level. This by no means exhausts the possible assumptions. For instance, we might increase the amount of money and credit used, but at a less rapid rate than the volume of goods and services. Thus, the amount of money and credit might be increased to 1,200 units, while the volume of goods and services exchanged increases to 15,000 units. The price level would now be 1,200 units divided by 15,000 units, or .08 as compared with the original price level of .10.

When a declining price level is a fact, the nominal value of goods-in-process or in stock decreases. This means that goods in terms of price have decreased. In terms of real value, (or the power to command other goods in exchange), these same commodities may have remained the same. Thus, the price of one bushel of corn might be \$1.00 and that of a bushel of wheat \$2.00. Assume now that the nominal value of corn decreases to 75¢ and that of wheat to \$1.50. Exchange ratio of corn in terms of wheat, and of wheat in terms of corn have, however, remained the same, since in either case two bushels of corn will exchange for one bushel of wheat. It is, there-

fore, possible for real value or exchange ratio to remain the same while the money value, or price, has decreased.

However, since all of our values are expressed in terms of money, a falling price level is followed by smaller profits, if not losses. This, in turn, causes business men to decrease production and curtail inventories. Production is cut down because the decrease in income has caused a shift in the demand schedule to the left, or at a given price a smaller number of units will be taken. Inventory curtailment is a question of inventory turnover since the greater the turnover, the less the expense for insurance, depreciation on storage space, and interest on capital invested in the inventory. Thus, if sales were originally \$150,000.00, the cost of goods sold \$90,000.00, and the average inventory \$15,000.00, the inventory turnover would be 6.0. If sales now dropped to \$100,000.00, and the cost of sales to \$66,000.00, the average inventory would have to drop to \$11,000.00 in order to keep the turnover at 6.0. If the inventory is not reduced, the turnover will be \$66,000.00 divided by \$15,000.00, or 4.4. Even if sales did not decrease, it is important that the inventory be as small as possible during a period of falling prices. The reason is obvious. Suppose that prices were at \$1.00 on January 1, 99¢ on February 1, and 98¢ on March 1. Under these conditions it will be sound economics for a business man to purchase goods, which will be used in March, as closely to March as is possible. If he purchases the commodities on January 1 and uses these commodities in

March, each unit will cost him .02¢ more than it would cost him had he purchased it on March 1.

What are the causes of price fluctuations? As the volume of goods and services produced and exchanged affect prices, so does the continual fluctuation in prices react upon business activity. A period of expansion causes an indefinite series of readjustments in prices, which change the pecuniary outlook of business men. This, in turn, leads to new changes in the volume of trade. Thus, as this change takes place, the whole operation starts over again. If prospects of profits are bright, the volume of trade expands, if prospects are dismal, volume of trade contracts. Prices, feeling the influence, cause another adjustment and the cycle goes on indefinitely.¹ The quantity theorists, on the other hand, claim that it is the volume of money which causes price fluctuations. They hold that as the volume of money and credit decreases the price level decreases, and as the quantity of money increases, the price level increases. This, according to this group, continues in an indefinite cycle. During a period of rising prices, conditions will again be at work which will cause an increase in money and credit, and, subsequently an increase in prices. This cycle continues without end.

Items to which money values have been assigned and which appear on the Balance Sheet and Income Statement, such

1. Mitchell, Wesley C., "Business Cycles." p. 107.

as Accounts Receivable, Accounts Payable, Inventories, and Surplus on the Balance Sheet; Purchases, Sales, Expenses, and Net Income on the Profit and Loss Statement, will change as a consequence. If business men were rational, i. e., they knew present business conditions thoroughly, and could predict the future, and, if they were in a position to adjust themselves to changes without friction and without lag in time, they would change the money value of inventories; restrict orders; make special endeavors to hold a good customer; and reduce indebtedness for it is better to be owed than owing at a period when more valuable dollars (in terms of goods) will have to be repaid because payment is postponed to some future date.¹ Since the burden of fixed charges increases with a fall in sales, business enterprises endeavor to diminish such costs wherever possible in order to control and maintain the financial stability of their enterprise.

The claim is made that most business men, (especially those who head large concerns) do know their business, and, as a matter of fact, do heed certain danger signals. Assuming all of this, it still remains that certain tools for the operation are indispensable to management.

Financial ratios are merely mathematical proportions. A change in any one item compared, results in a change in the proportion and, hence a different ratio.

1. Index Number Institute, New Haven, Conn. p.3.

Two concerns might start with the same current asset ratio, but an increase or decrease in current assets and current liabilities changes the original relationship since both items may not have increased or decreased in the same proportion. Assume that corporation "A" has current assets of \$200,000.00 and current liabilities of \$100,000.00; and that corporation "B" has current assets of \$250,000.00, and current liabilities of \$125,000.00. Both, then have a current asset ratio of 2.0. Now suppose that corporation "A's" current assets decrease to \$150,000.00 and current liabilities to \$75,000.00; and that corporation "B's" current assets have increased to \$300,000.00 and current liabilities to \$175,000.00. In this latter case, the current asset ratio of corporation "A" is still 2.0, while that of corporation "B" is 1.7. Absolutely the decrease in the case of "A" was \$50,000.00 and an increase of \$50,000.00 in the case of "B". But, relatively the changes have not been at the same rate. This phenomena is common in business activity. If perfect competition existed, and perfect knowledge of economic conditions were possible this phenomena would not exist, because all business men would have perfect knowledge and act rationally, and, therefore, all changes would be at the same rate. A study of financial ratios in a period of falling prices would then narrow down to a study of one business unit, since all units would act in the same manner.

Since the cause of falling prices is a controversial matter, it is unnecessary to discuss the remedies for falling

prices since that is beyond the scope of this paper. All that we are concerned with here is the empirical fact that prices have fallen at a steady pace since 1929.

Prices do not move uniformly upward or downward, nor do they remain uniformly constant. Moreover, prices are not quoted in the same manner. Thus, one price might be per ton, another per pound, still another per dozen, and so on through the numerous units of price quotations. For this reason, a study of price movements in detail is hard to understand, without some practical method of indicating the general trend. Such an indicator is called an index number of the price level. Index numbers, then, are relative prices which show the percentage changes in prices from a certain base month or year. Purchasing power of money, therefore, would be the reciprocal of the index number. To illustrate index numbers suppose that the price in a certain month or year is 10 per cent higher than in the base month or year; the relative, or index number, for the base month or year would be 100; for the month or year which was 10 per cent higher, the relative would be 110. In the year that the relative was 100, purchasing power of money would be 100, but in the year that the index number was 110, purchasing power would be 1 divided by 110, or .908. Expressed in this way, the relationship between one period and another can be quickly seen.

Many different methods of computing index numbers have been used. Among these we find the following: (1) the simple

arithmetical average of relative prices; (2) the median of relative prices; (3) the geometric mean of relative prices; (4) the harmonic mean; (5) the weighted arithmetical average of relative prices. The following symbols will be used to express the above formulae:

- a - price of a given commodity at the base period
- b - quantity of a given commodity at the base period
- a' - price of a given commodity at the second period
- b' - quantity of a given commodity at the second period
- c - price of second commodity at the base period
- d - quantity of second commodity at the base period
- c' - price of second commodity at the second period
- d' - quantity of second commodity at the second period
- $\frac{a}{a'}$ - a price relative (relation of price of a given commodity at the second period to the price of the base commodity.)
- $\frac{b}{b'}$ - a quantity relative (relation of quantity of a given commodity at the second period to the quantity of the base commodity.)
- P - price level at base period
- P' - price level at second period
- N - number of commodities.¹

The simple arithmetical average is found by adding up all of the relative prices for a certain year and dividing by the total number used. The following formula would be used:

$$P = \frac{\frac{a}{a} + \frac{c}{c} + \dots + \dots}{n} \quad \text{and}$$

$$P' = \frac{\frac{a'}{a} + \frac{c'}{c} + \dots + \dots}{n}$$

1. The above outline in the main has followed Mills, Frederick C., "Statistical Methods."

Table 1 shows an illustration of this method. This method is very defective because all of the relatives added are given the same weight and importance. As a matter of fact, one commodity might have much more importance than another. Thus, for instance, a pound of caviar is of much less relative importance than a pound of bread. Of course, where all of the units have the same importance this defect does not appear. "Other faults of the arithmetical index number are its tendencies to cause the rise of a price by a certain percentage to count for more than the fall by the same percentage of similar price, and to take no account of the fact that the pressure, which the rise of price of a thing would exert on the resources of the purchaser, would be mitigated by his curtailing his purchases of that thing; accompanied possibly by an extension of his purchases of other things, which had become relatively cheaper."¹

TABLE 1. ILLUSTRATION OF ARITHMETICAL AVERAGE

Commodities	Unit	Prices in Base Year	Relative in Base Year	Price in Second Year	Relative in Second Year
A	Bu.	1.10	100	1.21	110
C	Ton	4.00	100	6.00	150
E	Pound	.50	100	.65	130
G	Dozen	.30	100	.27	90
			400		480

$$P = \frac{400}{4} = 100,$$

$$P' = \frac{480}{4} = 120.$$

1. Marshall, Alfred, "Money, Credit and Commerce." p.275.

In order to correct the above defect when weights can be determined only with difficulty, the geometrical average of relative prices is often used. This is found by multiplying the relative prices for a given year and then taking the Nth root of this figure. Expressed in formula this would become:

$$P = \sqrt[N]{\frac{a}{a} \times \frac{c}{c} \times \dots \times \dots} \quad \text{and}$$

$$P' = \sqrt[N]{\frac{a'}{a} \times \frac{c'}{c} \times \dots \times \dots}$$

Table 2 gives an illustration of this method. The great difficulty with a method of this sort is its complexity. Logarithms are necessary for its computation, and, the final result is still inaccurate because it fails to take in account the fact that different commodities have a different importance to the individual.

TABLE 2. ILLUSTRATION OF GEOMETRIC AVERAGE OF RELATIVE PRICES

Commod- ities	Relative in Base Year	Log. of Col. 2	Relative in Second Year	Log. of Col. 4
A	100	2.0	110	2.04139
C	100	2.0	150	2.17609
E	100	2.0	130	2.11394
G	100	2.0	90	1.95424
		<u>8.0</u>		<u>8.28566</u>

$$P = \text{Anti Log. of } \frac{8}{4} \text{ or } 2.0 = 100$$

$$P' = \text{Anti Log. of } \frac{8.28566}{4} \text{ or } 2.071415 = 118.$$

For all practical purposes the median of relative prices is one of the best index numbers, and is simple in construction. However, it again fails because it does not give the proper weight to the different commodities. But it is preferred to the simple arithmetical average. The median is determined by finding the price, or number, which occupies the central position of all prices or numbers studied. The number of terms to be studied are arranged in the order of their magnitude. If the number of terms is odd, the middle term of the series becomes the median; if the number is even, the number falling between the two terms becomes the median. This is difficult to express in formula but would appear something as follows:

$$P = \text{middle term of } \frac{a}{a}, \frac{c}{c}, \dots, \dots$$

arranged in order of magnitude

$$P' = \text{middle term of } \frac{a'}{a'}, \frac{c'}{c'}, \dots, \dots$$

arranged in order of magnitude.

Using the relative prices of Table 1, the median would be 100 in the case of the base year and 120 in the second year. If another relative 160 were added the median would become 130.

90	130
110	150

Here the median $\frac{130 + 110}{2}$ or 120.¹

90	150
110	160
130	

The median now would become 130.

"The harmonic mean is the reciprocal of the arithmetical average of the reciprocals of the items or numbers in a series."² Expressed in formula this is:

$$P = \frac{1}{\frac{1}{a} + \frac{1}{c} + . + . + .}$$

TABLE 3 ILLUSTRATION OF HARMONIC MEAN

Commodities	Relative in Base Year	Relative in Second Year
A	100	1.10
C	100	1.50
E	100	1.30
G	100	.90
	400	4.80

$$P' = \text{Harmonic Mean} = \frac{1}{\frac{1}{1.10} + \frac{1}{1.50} + \frac{1}{1.30} + \frac{1}{.90}}$$

1. This could also be expressed as a geometrical average.

2. Harper, F. H., "Elements of Practical Statistics." p. 111.

$$\frac{1}{\frac{7672}{19305}} = \frac{\frac{1}{7672}}{77220} =$$

$$\frac{77220}{7672} = 100.6$$

In order to circumvent the above difficulties the weighted arithmetical is frequently used. Thus, if bread is 100 times as important as caviar, it is given a weight of 100, while caviar is given a weight of 1. By this method, each of the units affects the final average in proportion to its importance. In actual practice the determination of these weights is not as simple as the above illustration. Out of the maze of complexities, however, four logical methods of weighting have been suggested:

1. base year price x base year quantity
2. base year price x given year quantity
3. given year price x base year quantity
4. given year price x given year quantity.¹

Expressed in formula, weight #1 would become:

$$P = \frac{ab\left(\frac{a}{a}\right) + cd\left(\frac{c}{c}\right) + \dots}{ab\left(\frac{a}{a}\right) + cd\left(\frac{c}{c}\right) + \dots}$$

1. For a complete discussion see Fisher, Irving, "The Purchasing Power of Money," pp.385-429.

$$P' = \frac{ab\left(\frac{a'}{a}\right) + cd\left(\frac{c'}{c}\right) + \dots + \dots}{ab\left(\frac{a}{a}\right) + cd\left(\frac{c}{c}\right) + \dots + \dots}$$

Weight #2 would be::

$$P = \frac{ab\left(\frac{a}{a}\right) + cd\left(\frac{c}{c}\right) + \dots + \dots}{ab\left(\frac{a}{a}\right) + cd\left(\frac{c}{c}\right) + \dots + \dots}$$

$$P' = \frac{ab'\left(\frac{a'}{a}\right) + cd'\left(\frac{c'}{c}\right) + \dots + \dots}{ab\left(\frac{a}{a}\right) + cd\left(\frac{c}{c}\right) + \dots + \dots}$$

Table 4 illustrates the first method of weighting.

TABLE 4 ILLUSTRATION OF WEIGHTED ARITHMETICAL AVERAGE

Commod- ities	Price in Base Year	Quan. of Sales in Base Year*	Price x Weight	Price in Sec. Year	Quan. of Sales in Sec. Year*	Price x Weight
A	1.10	150	165	1.21	150	181.5
C	4.00	2	8	6.00	2	12.0
E	.50	300	150	.65	300	185.0
G	.30	600	180	.27	610	162.0
			<u>503</u>			<u>540.5</u>

* In thousands.

$$P = \frac{503}{503} = 100$$

$$P' = \frac{540.5}{503} = 107$$

The figures used in this problem have been selected from the United States Bureau of Labor Statistics, and have been computed by the weighted arithmetical method. Consequently each commodity affects the final index according to its relative importance. Table Number 5 is a list of figures which will be used in analyzing the problem. The yearly figures are the averages of the monthly index numbers. A somewhat different industrial split-up is used by the Bureau of Labor Statistics than was used in this problem in choosing the corporations. In all cases where a difference appears, proper notations have been made regarding the figures used.

TABLE 5

WHOLESALE COMMODITY PRICE INDEX - BY THE UNITED STATES BUREAU
OF LABOR STATISTICS. RELATIVES, 1926, 100.¹

GROUP	1926	1927	1928	1929	1930	1931
Meat Packing	100.0	92.6	107.3	109.1	98.4	73.6
Iron and Steel	100.0	95.9	94.9	97.3	91.6	86.6
Automobile and Trucks	100.0	101.8	106.5	110.9	104.1	99.7
Textile	100.0	95.7	96.3	93.7	80.8	62.9
Cotton Goods	100.0	97.9	101.2	99.4	87.6	67.7
Silk Goods	100.0	88.0	83.6	80.1	63.3	44.8
Woolen Goods	100.0	98.1	100.4	97.8	87.8	73.5
Copper Mining	100.0	91.9	93.3	105.0	81.0	56.8
Oil and Oil Producing	100.0	72.6	72.0	71.3	61.7	38.9
Chemical and Fertilizer ²	100.0	96.7	95.5	94.4	88.7	74.8
Machinery and Machine Equipment ³	100.0	100.2	97.2	98.5	98.1	90.5
Building Equip. and Supplies	100.0	93.7	93.7	97.1	90.3	74.9
Food Products	100.0	96.5	101.0	99.7	90.2	72.9
Baking Products and Flour ⁴	100.0	96.2	95.2	91.6	83.2	67.6
Candy, Soft Drinks & Chew. Gum ⁴	100.0	96.2	95.2	91.6	83.2	67.6
Dairying	100.0	104.0	105.6	105.8	95.8	84.8
Miscellaneous ⁴	100.0	96.2	95.2	91.6	83.2	67.6
Office and Business Equipment ³	100.0	100.2	97.2	98.5	98.1	90.5
Coal Mining ⁵	100.0	100.4	93.1	91.3	89.4	83.9
TOTAL	100.0	95.4	97.7	96.5	86.4	69.1

1. Taken from Standard Trade and Securities, Vol. 63, No. 7, Jan. 1932, Sec. 3, pp. 219 to 229.

2. See Chemicals and Drugs, p. 227.

3. See Metal and Metal Products - Other Metal Products, p. 226.

4. See Food Products - Other Foods, p. 222.

5. See Fuel and Lighting - Bituminous Coal, p. 224.

CHAPTER III

WORKING CAPITAL RATIOS.

Working capital consists of the excess of Current Assets over Current Liabilities. This excess is also called net current assets, or net working capital. Working capital ratios measure the ability of a business to pay its current debts without consuming any of its inventory. A business, for instance, which can liquidate its current liabilities with current assets other than the inventory has a stronger financial position than one which can not. This is true because in a forced sale, inventories usually do not bring their full value. Bankers are concerned with these ratios because most of their loans are short term. They are, therefore, interested in the ability of the business man to pay his current debts. Business men are also interested in these ratios because it is the working capital ratios which measure their ability to borrow additional working capital, or renew short term loans without difficulty.

The following is a list of working capital ratios:

- (1) Current asset ratio. This ratio is computed by dividing current assets by current liabilities.
- (2) Cash ratio. Cash ratio is found by dividing cash by current liabilities.
- (3) Cash and equivalent plus receivables ratio. This ratio is also known as the "Acid Test"

and is calculated by dividing cash and equivalent plus receivables by current liabilities.

- (4) Turnover of Receivables is determined by dividing sales by accounts receivable.
- (5) Inventory Turnover. Cost of goods sold divided by the average inventory gives this ratio.
- (6) Ratio of working capital to inventory. This ratio is found by dividing working capital (net current assets) by inventory.
- (7) Ratio of accounts payable to notes payable is computed by dividing the former by the latter.
- (8) Ratio of Inventory to accounts payable is found by dividing the inventory by accounts payable.¹

Not all of the above ratios are necessary in an analysis. But, of course, the more ratios used, the better and more complete the analysis. In this paper only three working capital ratios have been used. The reason for limiting the number is twofold; in the first place this paper is not intended as an exhaustive study of financial ratios. Its purpose is to show the tendency of financial ratios in a period of falling prices. It is reasonable to assume, therefore, that other working capital ratios will reveal similar trends. In the second place, much of the necessary information was inaccessible. All figures were taken from the Standard Trade and Securities Service, either directly or indirectly. In this elaborate compilation, we find that much of the desired information is not given because not all corporations show

1. Swanish, P. T., "Business Organization and Management." p. 150.

this information in their financial statements. Further, corporation statements vary in form and content. For logical reasons, therefore, the items had to be grouped under general heads. The following items were unavailable: cash, accounts receivable and notes receivable (shown only in total), cost of goods sold, sales, accounts payable, and notes payable.

The three working capital ratios used in this paper are:

1. Ratio of current assets to current liabilities.
2. Ratio of cash and equivalent plus receivables to current liabilities.
3. Ratio of net working capital to inventory.

Current asset ratio denotes the current strength of a business by immediately showing the ability of the business to meet its current debts. It is a commonplace of financial practice that the current assets must at least equal the current liabilities, otherwise, a concern would be insolvent. On the other hand, if the ratio is too high, it is probable that a concern has too many funds invested in its cash, receivables, or inventories. "For many years the current ratio of two to one was considered the normal and proper one for all businesses, but today it is realized that many other factors enter into the question of determining the soundness of a business, and that a current ratio much greater or considerably smaller may be deemed correct for certain concerns."¹ Thus, if

1. Bonneville, Joseph Howard, "Elements of Business Finance." p. 192.

a concern has a very small inventory, it will not be necessary to have a large current asset ratio, assuming, of course, that the rest of its current assets are liquid. Liquidity denotes the saleability of an asset, or, the capacity to quickly turn the asset into cash. Cash, government bonds, good accounts receivable, other securities and inventories, would represent the liquidity of the current assets. It is evident, therefore, that if a concern has liquid assets, it need not have a high current asset ratio.

In order to measure liquidity of current position, the "Acid Test" is applied. Cash and equivalent, plus notes and accounts receivables, should equal current liabilities. If this is the case, creditors can be paid in full without liquidating the inventory which, in a forced sale, invariably results in a substantial loss. The size of this ratio is again relative to the character of a particular business. Thus, if receivables are reasonably liquid, and if there is a rapid inventory turnover, a ratio of less than 1:1 may be adequate. Where receivables are not reasonably liquid and where the inventory turnover is small, a much larger ratio may be necessary. A high ratio, on the other hand, may show that either the current debt is small, or else that too much money is tied up in cash or receivables. The executive should, therefore, watch the tendency of this ratio very carefully, regardless of the nature of its change.

The ratio of net working capital to inventory supports,

and adds further meaning, to the current asset ratio. This ratio shows the proportion of owned working capital to inventory and, consequently, the greater the ratio the less risk of loss from a price decline. The size of the ratio would, therefore, depend upon the kind of goods represented by the inventory. "Raw material prices vary more widely than prices of finished goods; wholesale prices more than retail prices; prices of staples less than prices of luxuries; prices of trade marked goods less than un-marked goods, etc."¹ A large inventory, therefore, which is sensitive to marked price fluctuations should be looked upon as a danger signal.

A study of all current asset ratios for all corporations in Appendix "A", shows a wide variation among the ratios of the different corporations in the different industries. Most of the corporations have at least a 2 to 1 ratio. However, there is an exception to this in the case of the Nashawena Mills Corporation in the cotton industry, and the United Dairy Products in the food products industry. In the former case, the corporation had less than a 2 to 1 ratio even though the other corporations within the industry have unusually high ratios. On the other hand, the ratio of this company fluctuates very little as compared to the large fluctuations in the other corporations. Other corporations have a current asset ratio below 2 to 1, but in each case it is a temporary

1. Swanish, P. T., "Business Organization and Management." p. 154.

fluctuation below this standard. For a list of corporations below a 2 to 1 ratio, see Appendix "B". No industry studied fell below this "rule of thumb" standard.

Table 6 shows a comparison of prices and current ratios for the different industries during the period studied. The list of prices was taken directly from Table 5, while the ratios were computed from a composite balance sheet of the corporations studied. Thus, in the meat packing industry, four corporations were studied. The current asset ratio for this industry was found by dividing the total current assets of these four corporations by their total current liabilities.

A study of the Meat Packing Industry shows that prices decreased in 1927, increased in 1928 and 1929, and decreased in 1930 and 1931 (a rather sharp decrease in 1931). Current asset ratio increased in 1927, decreased in 1928 and 1929, and increased sharply in 1930 and 1931. The current asset ratio, therefore, moved in just the opposite direction of prices. In other words, a decrease in price was accompanied by an increase in the ratio, while a rise in price was accompanied by a decrease in ratio. The increase in ratio accompanying the decrease in price can be accounted for by the fact that the corporations studied decreased their current indebtedness more rapidly than the decline in their current assets. Current assets of the Meat Packing Industry in 1931 were approximately 70% of the 1926 total, while current liabilities were only 45%.

Again in the Iron and Steel Industry prices moved in

TABLE 6

COMPARISON OF WHOLESALE COMMODITY PRICES AND CURRENT
ASSET RATIO BY INDUSTRY.

INDUSTRY	1926	1927	1928	1929	1930	1931
<u>Meat Packing</u>						
Wholesale Com'ty Prices	100.0	92.6	107.3	109.1	98.4	73.6
Current Asset Ratio	4.7	4.8	4.7	4.2	6.3	7.3
<u>Iron and Steel</u>						
Wholesale Com'ty Prices	100.0	95.9	94.9	97.3	91.6	86.6
Current Asset Ratio	4.8	5.0	5.1	4.8	5.1	7.2
<u>Automobiles and Trucks</u>						
Wholesale Com'ty Prices	100.0	101.8	106.5	110.9	104.1	99.7
Current Asset Ratio	3.2	3.3	3.2	4.0	5.1	4.9
<u>Textile</u>						
Wholesale Com'ty Prices	100.0	95.7	96.3	93.7	80.8	62.9
Current Asset Ratio	4.5	5.8	6.3	7.0	10.1	10.9
<u>Copper Mining</u>						
Wholesale Com'ty Prices	100.0	91.9	93.3	105.0	881.0	56.8
Current Asset Ratio	5.1	4.6	3.5	3.2	3.1	2.5
<u>Oil and Oil Producing</u>						
Wholesale Com'ty Prices	100.0	72.6	72.0	71.3	61.7	38.9
Current Asset Ratio	3.3	5.0	4.6	4.9	4.7	6.1
<u>Chemical and Fertilizer</u>						
Wholesale Com'ty Prices	100.0	96.7	95.5	94.4	88.7	74.8
Current Asset Ratio	8.2	7.9	7.2	6.8	7.0	9.2
<u>Mchry. and Mch. Equip.</u>						
Wholesale Com'ty Prices	100.0	100.2	97.2	98.5	98.1	90.5
Current Asset Ratio	6.6	7.5	4.5	4.6	11.4	11.8
<u>Bld. Equip. and Supplies</u>						
Wholesale Com'ty Prices	100.0	93.7	93.7	97.1	90.3	74.9
Current Asset Ratio	5.2	4.3	4.3	4.1	4.6	6.8

TABLE 6 CONT'D.

INDUSTRY	1926	1927	1928	1929	1930	1931
<u>Food Products</u>						
Wholesale Com'ty Prices	100.0	96.5	101.0	99.7	90.2	72.9
Current Asset Ratio	3.7	3.6	4.3	3.6	4.3	5.3
<u>Office and Bus. Equip.</u>						
Wholesale Com'ty Prices	100.0	100.2	97.2	98.5	98.1	90.5
Current Asset Ratio	5.8	7.0	6.7	6.0	7.9	8.8
<u>Coal Mining</u>						
Wholesale Com'ty Prices	100.0	100.4	93.1	91.3	89.4	83.9
Current Asset Ratio	2.9	2.1	2.1	2.9	2.7	4.1
<u>Total</u>						
Wholesale Com'ty Prices	100.0	95.4	97.7	96.5	86.4	69.1
Current Asset Ratio	3.9	4.4	4.3	4.4	4.9	5.8

just the opposite direction of the current asset ratio. Here prices moved downward in 1927 and 1928, took an upward turn in 1929, and then moved downward in 1930 and 1931. Current asset ratio moved upward in 1927 and 1928, downward in 1929, and upward again in 1930 and 1931. As, in the Meat Packing Industry, there seems to be a tendency for the industry, as a whole, to increase its current liabilities at a more rapid rate than its current assets during a period of rising prices, while during a period of falling prices there seems to be an opposite tendency. Thus, comparing 1931 and 1926, we find that current assets in 1931 are 87% of 1926, while current liabilities in 1931 are only 59% of the 1926 assets.

Two points are to be especially noted in the Automobiles and Trucks Industry. In the first place, the price changes are much different than in the other industries studied. All of the other industries show a price decline in 1930 and 1931, and when this 1931 price level is compared with the 1926 level, we find it to be very much lower. This is not true in the Automobiles and Trucks Industry. For here, prices moved upward in 1930 and, although they moved downward in 1931, the price level in this year is only .3% lower than in 1926. The second noticeable thing is that the ratio has not moved in an opposite direction of the price level in this industry. Comparing it with the general price level of all industries, however, we do find this trend with the exception of 1931. Both in 1929 and 1930 the current liabilities

Year	General Price Level of all Industries	Current Asset Ratio
1926	100.0	3.2
1927	95.4	3.3
1928	97.7	3.2
1929	96.5	4.0
1930	86.4	5.1
1931	69.1	4.9

decreased more rapidly than did the current assets. This showed itself in an increase in the ratio. In 1931, however, the current assets decreased more rapidly than the current liabilities, and, hence, the reason for the drop in the ratio.

Prices in the Textile Industry, as a whole, with the exception of 1928, showed a downward trend, while current asset ratio showed a steady increase each successive year. In this industry, there is a tendency for prices and current asset ratio to move in opposite directions. The ratio increased because current liabilities decreased each year until in 1931 they were only 22% of the 1926 total; while current assets decreased in 1927 and 1928, increased in 1929, and decreased in 1930 and 1931, at which time they were 54% of the 1926 current assets.

Of all the industries studied, the Copper Mining Industry is unique in that the current asset ratio shows a movement in the same direction as the movement of prices. In other words, with an increase in the price index, has been an increase in current asset ratio; with a decrease in the

price index has come a decrease in the current asset ratio. Both the 1931 price level and the 1931 current asset ratio were approximately one-half of the 1926 figures. This tendency is accounted for by the fact that the current liabilities of the industry in each year were larger than the current liabilities of 1926. For 1928, 1929, and 1930 current assets were larger than in 1926, but these increased more rapidly than the current liabilities. In 1927 and 1931, moreover, current assets were smaller than those of 1926, while current liabilities were greater.

Mixed trends seem to appear in the Oil and Oil Producing Industry. Prices dropped sharply in 1927, decreased slightly in 1928 and 1929, and then took another sharp drop in 1930 and 1931. Current asset ratio increased in 1927, decreased in 1928, increased in 1929, decreased in 1930, and increased in 1931. The following shows the movement of current assets and current liabilities for the years in question. The figures are given in millions of dollars.

Year	Current Assets	Current Liabilities
1926	1553	466
1927	807	162
1928	1550	337
1929	1779	365
1930	1650	349
1931	1361	222

Again, in the Chemical and Fertilizer Industry there seems to be a combined tendency, yet, in spite of slight variations, the familiar movement is noticeable. Prices

moved from 100 in 1926 to 74.8 in 1931, while current asset ratio moved from 8.2 in 1926 to 9.2 in 1931.

In the Machinery and Machine Equipment Industry prices in 1927 remained very nearly at the same level as in 1926. In 1928 prices moved downward, in 1929 upward, and in 1930 and 1931 downward. Current asset ratio moved upward in 1927, downward in 1928, and upward in 1929, 1930, and 1931. In 1930 the upward movement was very noticeable, the ratio going from 4.6 in 1929 to 11.4 in 1930. Up until 1930, therefore, the ratio moved in the same direction as prices, while for the years 1930 and 1931 the ratio and price movement were in the opposite direction. The reason for the high ratio in 1930 and 1931 was the drop in current liabilities. 1930 current liabilities were 44% of 1929, while in 1931 they were 36% of the 1929 figure. Current assets in 1930 were 109% of the 1929 current assets, and in 1931 were 92% of the 1929 figure.

In the Building Equipment and Supplies Industry, we find, with the exception of the year 1927, that this ratio again moved in just the opposite direction of the price level. Prices moved downward in 1927, remained the same in 1928, moved upward in 1929, and downward again in 1930 and 1931. Current asset ratio moved downward in 1927, remained the same in 1928, moved downward in 1929, and upward again in 1930 and 1931. This is explained by the fact that current indebtedness was reduced considerably in 1930 and 1931 - the two years showing the most marked decline in prices.

Food Products Industry shows the same tendency as the Machinery and Machine Equipment Industry, namely, a movement in the same direction of prices and current asset ratio until 1930. For 1930 and 1931, prices and the ratio moved in the opposite direction. Prices moved downward, while the ratio moved upward because current assets went from 105.16 million in 1929, to 105.45 million in 1930, and 76.30 million in 1931, while current liabilities went from 25.63 million in 1929 to 22.79 million in 1930, and 11.29 million in 1931.

Prices in the Office and Business Equipment Industry remained practically stationary in 1927 (moving from 100.0 in 1926 to 100.2 in 1927), moved downward in 1928, upward in 1929, and downward in 1930 and 1931, while the current asset ratio moved upward in 1927, downward in 1928 and 1929, and upward in 1930 and 1931. The following illustration shows this movement:

Years	Prices	Current Assets Ratio	Current Assets (millions)	Current Liabilities (millions)
1926	100.0	5.8	\$106.5	\$18.2
1927	100.2	7.0	119.7	17.0
1928	97.2	6.7	123.3	18.3
1929	98.5	6.0	119.6	19.9
1930	98.1	7.9	109.2	13.8
1931	90.5	8.8	72.8	8.3

For the years 1929, 1930, and 1931, the movement of the ratio and the price level is in the opposite direction.

Again in the Coal Mining Industry we find a mixed

trend in the movement of the ratio and prices. Prices moved slightly upward in 1927, downward in 1928, 1929, 1930, and 1931. Current asset ratio moved downward in 1927, remained the same in 1928, moved upward in 1929, downward in 1930 and upward in 1931. In 1930 we find the movement in the same direction, while in the years 1927, 1929, and 1931, we find the movements in the opposite directions. The year 1928 shows no change in the ratio, while there was a decided drop in the price level.

Taking the figures for all industries we find that the movement of prices is exactly opposite to the movement of current asset ratio. When the price moved upward the ratio moved downward, when the price moved downward the ratio moved upward. This suggests that business enterprises hasten to get out of debt during periods of falling prices. This is to be expected since it is better to be owed, than to owe in a period of falling prices, as previously suggested. Table 7 shows this tendency of the 122 corporations studied, of getting out of debt.

TABLE 7 TOTAL CURRENT ASSETS AND CURRENT LIABILITIES FOR ALL CORPORATIONS.

Years	Current Assets in Millions	Current Liabilities in Millions	Wholesale Commodity Prices	Current Asset Ratio
1926	\$4745.51	\$1210.21	100.0	3.9
1927	4109.14	930.93	95.4	4.4
1928	5220.46	1226.54	97.7	4.3
1929	5534.86	1255.49	96.5	4.4
1930	5029.15	1019.60	86.4	4.9
1931	4258.28	731.64	69.1	5.8

A study of the 122 corporations in Appendix "C" shows a wide variation in the ratio of Cash and equivalent plus Receivables to Current Liabilities. This ratio is called the "Acid Test". This variation is from a ratio of .05 in the case of the Houston Oil Company, to a ratio of infinity in the case of the Pepperall Manufacturing Company. In the latter case the company has no current liabilities. Although a 1:1 ratio is considered the normal ratio, we again find many instances where corporations have a ratio below this figure. Appendix "D" gives a list of such corporations.

The average of all the corporations studied shows a ratio above this "rule of thumb" standard, and, as a matter of fact, a ratio which equals or exceeds 2 to 1. This shows that, on the average, the corporations studied were in a strong liquid position.

Table 8 compares this ratio with the price level. In the main, there is a tendency for this ratio to increase with a decrease in the price level.

In the Meat Packing Industry in 1927, the movement of both the ratio and the price index was in the same direction, price level moved downward, as did the ratio. In 1928, 1929, 1930, and 1931 the opposite appears. Prices moved upward in 1928 and 1929; downward in 1930 and 1931. The ratio, on the other hand, moved downward in 1928 and 1929, and upward in 1930 and 1931. The increase in the ratio in 1930 and 1931 is explained by the fact that the industry greatly reduced its

TABLE 8

COMPARISON OF WHOLESALE COMMODITY PRICES AND CASH AND EQUIVALENT PLUS RECEIVABLES TO CURRENT LIABILITIES BY INDUSTRY.

INDUSTRY	1926	1927	1928	1929	1930	1931
<u>Meat Packing</u>						
Wholesale Commodity Price	100.0	92.6	107.3	109.1	98.4	73.6
"Acid Test" ratio	2.1	2.0	1.9	1.7	2.6	3.7
<u>Iron and Steel</u>						
Wholesale Commodity Price	100.0	95.9	94.9	97.3	91.6	86.6
"Acid Test" ratio	2.5	2.5	2.8	2.6	2.3	3.0
<u>Automobiles and Trucks</u>						
Wholesale Commodity Price	100.0	101.8	106.5	110.9	104.1	99.7
"Acid Test" ratio	1.7	2.0	1.8	2.1	3.2	3.4
<u>Textile</u>						
Wholesale Commodity Price	100.0	95.7	96.3	93.7	80.8	62.9
"Acid Test" ratio	1.8	2.1	2.6	3.1	5.2	4.7
<u>Copper Mining</u>						
Wholesale Commodity Price	100.0	91.9	93.3	105.0	81.0	56.8
"Acid Test" ratio	2.3	1.9	1.9	1.5	1.3	.8
<u>Oil and Oil Producing</u>						
Wholesale Commodity Price	100.0	72.6	72.0	71.3	61.7	38.9
"Acid Test" ratio	1.7	2.1	2.4	2.5	2.5	3.5
<u>Chemical and Fertilizer</u>						
Wholesale Commodity Price	100.0	96.7	95.5	94.4	88.7	74.8
"Acid Test" ratio	4.8	4.5	4.8	4.4	4.2	5.4
<u>Machinery and Machine Equip.</u>						
Wholesale Commodity Price	100.0	100.2	97.2	98.5	98.1	90.5
"Acid Test" ratio	3.5	3.8	2.3	2.3	5.8	6.3
<u>Building Equip. and Supplies</u>						
Wholesale Commodity Price	100.0	93.7	93.7	97.1	90.3	74.9
"Acid Test" ratio	3.2	2.6	2.6	2.6	3.2	4.3

TABLE 8 CONT'D.

INDUSTRY	1926	1927	1928	1929	1930	1931
<u>Food Products</u>						
Wholesale Commodity Price	100.0	96.5	101.0	99.7	90.2	72.9
"Acid Test" ratio	2.4	2.1	2.7	2.0	2.5	3.5
<u>Office and Business Equipment</u>						
Wholesale Commodity Price	100.0	100.2	97.2	98.5	98.1	90.5
"Acid Test" ratio	3.8	4.6	4.6	3.9	5.2	6.1
<u>Coal Mining</u>						
Wholesale Commodity Price	100.0	100.4	93.1	91.3	89.4	83.9
"Acid Test" ratio	2.0	1.2	1.3	2.0	1.9	2.7
<u>Total</u>						
Wholesale Commodity Price	100.0	95.4	97.7	96.5	86.4	69.1
"Acid Test" ratio	2.0	2.2	2.3	2.3	2.6	3.2

current indebtedness.

In the Iron and Steel Industry we find once more a tendency for the ratio and prices to move in opposite directions, the years 1927 and 1930 being the exceptions. In 1927 prices moved downward, while the ratio remained steady. In 1930 both the price and ratio moved downward. The following list shows why this movement has occurred in the industry:

Years	Cash and Equivalent in Millions	Receivables in Millions	Current Liabilities in Millions
1926	\$293.98	\$171.29	\$187.79
1927	250.53	166.85	169.34
1928	307.98	193.50	177.89
1929	362.35	173.72	209.44
1930	278.66	138.25	179.27
1931	234.16	95.62	110.48

In the years 1928, 1930, and 1931 the ratio and prices in the Automobile and Truck Industry moved in opposite directions, while in 1927 and 1929, the movement was in the same direction. In both of the latter years, prices moved upward compared with the preceding year. In both instances, the ratio moved upward from the preceding year. The reason for this tendency to move in this opposite direction is that the corporations on the average reduced their current liabilities as soon as the price level declined.

With the exception of the years 1928 and 1931 prices and this ratio in the Textile Industry moved in opposite directions. Although the 1931 ratio was lower than the 1930

ratio, despite the downward movement in prices, yet a comparison of the 1931 and 1926 ratios, and of the 1931 and 1926 price levels shows that the movement has been in the opposite direction. Thus, while the price index fell from 1926 to 1931, the ratio has increased considerably. In this industry the marked reduction of current liabilities occurred in 1930, and in that year, the "Acid Test" ratio was unusually high. There was another reduction in 1931, but this decrease was not as large as in 1930. Cash and receivables, on the other hand, decreased slightly in 1930, and noticeably in 1931.

As in the case of the current asset ratio, this ratio in the Copper Mining Industry shows a tendency to react directly with the price level. If we compare all of the years with the 1926 level, we find, with one exception, i. e., 1929, that where price has moved downward the ratio has moved downward. In 1929 prices moved upward while the ratio moved downward. No definite conclusions can be drawn in explaining this tendency, except to point out the fact that current liabilities have not been reduced. We find 1926 to be the year in which the smallest amount of current liabilities were reported, while 1931 we find to be the year in which the smallest amount of current assets were reported.

Prices in the Oil and Oil Producing Industry moved downward in each succeeding year, while the ratio moved upward in each succeeding year with the exception of 1930. In this year we find no change in the ratio, yet the price level moved

considerably downward. Again the reducing of current indebtedness during declining prices has been the main cause of this tendency.

The Chemical and Fertilizer Industry again shows a combination of movement. Prices moved downward in each succeeding year, beginning with 1926, while the ratio moved downward in 1927, upward in 1928, downward in 1929 and 1930, and upward in 1931. Despite these variations, the ratio was lower than in 1926. A sharp drop in current liabilities accounts for the high ratio in 1931, while the large amount of current liabilities in 1929 and 1930 accounts for the low ratio.

In the first two years the ratio in the Machinery and Machine Equipment Industry moved in the same direction as the prices. In 1929 the price level moved upward, while the ratio remained the same. The following two years, with prices falling, this ratio moved sharply upward. The year 1931, in which the price movement was most noticeable, showed the ratio movement in the opposite direction of the price movement. Again this movement is accounted for by the fact that current indebtedness was reduced as soon as the declining price level became really marked. 1930 current liabilities were 45% of the 1929 total, while in 1931 they were only 36% of the 1929 figure. Cash and Receivables in 1930 were 113% of the 1929 figure, while in 1931 they were approximately 98% of the 1929 level.

Building Equipment and Supplies Industry shows a similar movement to the above industry. In 1927, prices and

the ratio both moved downward. The year 1928 shows the same price level and the same ratio as in the preceding year. In 1929 prices moved upward while the ratio remained the same. From here on prices dropped steadily, while the ratio increased. Again current liabilities were reduced, thus causing the increase in the ratio in 1930 and 1931.

Until the year 1930, the movement of the ratio and prices in the Food Products Industry was in the same direction. In the years 1930 and 1931, however, there is a reverse tendency, and while prices were moving downward, the ratio moved steadily upward. Reduction of current indebtedness explains this movement. Taking the year 1929 as a base of 100, current liabilities in 1930 were 88, and in 1931 were 66. With the same base of 100 for cash and receivables in 1929, in 1930 they became 110, and in 1931 they are 115.

In the Office and Business Equipment Industry the last three years show this opposite movement of the prices and the ratio. In 1927 prices moved slightly upward, and with this went an increase in the ratio. The movement in prices, which was downward in 1928, was accompanied by no change in the ratio. From here prices moved upward in 1929, downward in 1930 and 1931, while the ratio moved downward in 1929, and upward in 1930 and 1931. Again the movement in 1930 and 1931 has been caused by the reduction of current liabilities.

With the exception of 1930 the price level and the ratio moved in the opposite direction in the Coal Mining In-

dustry. Price level moved upward in 1927 and downward in 1928, 1929, 1930, and 1931, while the ratio moved downward in 1927, upward in 1928, and 1929, downward in 1930 and upward again in 1931. The reason for the ratio not increasing in 1930 was that cash and equivalent, and receivables were decreased more rapidly than were the current liabilities.

A study of all industries for cash and equivalent, plus receivables to current liabilities reveals the same tendency as the current asset ratio, although not as definitely, because in 1928 and 1929 the price level and ratio did not move in opposite directions. Prices moved downward in 1927, upward in 1928, and downward again in 1929, 1930, and 1931. The ratio moved upward in 1927 and 1928, remained steady in 1929; and then increased in 1930 and 1931. The increase in the ratio in 1930 and 1931 is again explained by the fact that current liabilities were reduced considerably. Table 9 shows how this tendency has taken place.

TABLE 9 TOTAL OF CASH, RECEIVABLES, AND CURRENT LIABILITIES FOR ALL INDUSTRIES.

Year	Cash in Millions	Receivables in Millions	Current Liabilities in Millions	Prices	Ratio
1926	\$1216.54	\$1227.51	\$1210.21	100.0	2.0
1927	1123.98	900.18	930.93	95.4	2.2
1928	1649.20	1162.46	1226.54	97.9	2.3
1929	1578.77	1294.50	1255.49	96.5	2.3
1930	1560.54	1081.54	1019.60	86.4	2.6
1931	1511.72	811.50	731.64	69.1	3.2

In the case of the Net Working Capital to Inventory ratio, the 122 corporations shown in Appendix "E", do not show as large a variation from year to year, as was the case with the former ratios. Yet there are certain variations, and, consequently, it would be hard to note any general tendency from a study of the corporations in this list. A study of industries, however, does give us an idea of the tendency to be found in this ratio. Table 10 gives a list of the ratio of Net Current Assets to Inventory and the Wholesale Commodity prices for the years studied.

A study of each industry is unnecessary since this ratio does not show a wide fluctuation between industries, nor does it show a wide fluctuation within any industry. It might be well to point out, however, that comparing 1926 and 1931, the ratio was higher in 1931 in every industry with the exception of the Iron and Steel Industry and the Copper Mining Industry. Failure to reduce inventories in both industries was the cause for the low ratio in 1931.

The total for all industries does not show any general tendency except that in 1930 and 1931 when price decline was most pronounced, the ratio moved upward. Thus, prices moved downward in 1927, upward in 1928, and downward in 1929, 1930, and 1931. The ratio remained the same in 1927, moved upward in 1928, downward in 1929, and upward in 1931. Table 11 shows a comparison of prices, ratios, net current assets, and inventories.

TABLE 10

COMPARISON OF PRICES AND RATIO OF WORKING CAPITAL TO INVENTORY
FOR ALL INDUSTRIES.

INDUSTRY	1926	1927	1928	1929	1930	1931
<u>Meat Packing</u>						
Wholesale Commodity Prices	100.0	92.6	107.3	109.1	98.4	73.6
Ratio of Net Work. Cap. to Inv.	1.4	1.4	1.3	1.3	1.4	1.7
<u>Iron and Steel</u>						
Wholesale Commodity Prices	100.0	95.9	94.9	97.3	91.6	86.6
Ratio of Net Work. Cap. to Inv.	1.6	1.6	1.8	1.7	1.5	1.5
<u>Automobiles and Trucks</u>						
Wholesale Commodity Prices	100.0	101.8	106.5	110.9	104.1	99.7
Ratio of Net Work. Cap. to Inv.	1.5	1.7	1.6	1.6	2.1	2.5
<u>Textile</u>						
Wholesale Commodity Prices	100.0	95.7	96.3	93.7	80.8	62.9
Ratio of Net Work. Cap. to Inv.	1.3	1.3	1.3	1.6	1.8	1.6
<u>Copper Mining</u>						
Wholesale Commodity Prices	100.0	91.9	93.3	105.0	81.0	56.8
Ratio of Net Work. Cap. to Inv.	1.4	1.3	1.6	1.3	1.2	.9
<u>Oil and Oil Producing</u>						
Wholesale Commodity Prices	100.0	72.6	72.0	71.3	61.7	38.9
Ratio of Net Work. Cap. to Inv.	1.4	1.4	1.7	1.6	1.7	1.9
<u>Chemical and Fertilizer</u>						
Wholesale Commodity Prices	100.0	96.7	95.5	94.4	88.7	74.8
Ratio of Net Work. Cap. to Inv.	2.1	2.1	2.6	2.5	2.2	2.2
<u>Machinery and Machine Equip.</u>						
Wholesale Commodity Prices	100.0	100.2	97.2	98.5	98.1	90.5
Ratio of Net Work. Cap. to Inv.	1.8	1.8	1.6	1.6	1.9	2.0
<u>Building Equip. and Supplies</u>						
Wholesale Commodity Prices	100.0	93.7	93.7	97.1	90.3	74.9
Ratio of Net Work. Cap. to Inv.	2.2	1.9	2.0	2.1	2.6	2.3

TABLE 10 CONT'D.

INDUSTRY	1926	1927	1928	1929	1930	1931
<u>Food Products</u>						
Wholesale Commodity Prices	100.0	96.5	101.0	99.7	90.2	72.9
Ratio of Net Work. Cap. to Inv.	2.2	1.7	2.0	1.6	1.9	2.4
<u>Office and Building Equip.</u>						
Wholesale Commodity Prices	100.0	100.2	97.2	98.5	98.1	90.5
Ratio of Net Work. Cap. to Inv.	2.4	2.5	2.7	2.4	2.6	2.9
<u>Coal Mining</u>						
Wholesale Commodity Prices	100.0	100.4	93.1	91.3	89.4	83.9
Ratio of Net Work. Cap. to Inv.	2.0	1.2	1.4	2.2	2.3	2.2
<u>Total</u>						
Wholesale Commodity Prices	100.0	95.4	97.7	96.5	86.4	69.1
Ratio of Net Work. Cap. to Inv.	1.5	1.5	1.7	1.6	1.7	1.8

TABLE 11. COMPARISON OF THE RATIO NET WORKING CAPITAL TO INVENTORY, PRICES, NET CURRENT ASSETS, AND INVENTORY FOR ALL INDUSTRIES.

Year	Net Current Assets in Millions	Inventory in Millions	Prices	Ratio
1926	\$3535	\$2301	100.0	1.5
1927	3178	2085	95.4	1.5
1928	3994	2409	97.7	1.7
1929	4280	2664	96.5	1.6
1930	4010	2388	86.4	1.7
1931	3527	1935	69.1	1.8

From this it can be concluded that Working Capital Ratios tend to move in an opposite direction of prices. This tendency seemed to be most pronounced in the years 1930 and 1931, when the price decline was most noticeable.

CHAPTER IV.

INCOME AND EXPENSE RATIOS.

Income and expense ratios show how much is being earned on capital invested in the business. Compared from period to period, these ratios show the growth or decline of a concern. If profits are steadily declining, it is better for a business to get its capital from sources which do not impose fixed charges upon the business. This is also true when there is a condition existing in which the rate of profit continues lower than the fixed charges.

The following Income and Expense ratios are used by the executive to watch the trend of his business:

1. Ratio of Net Operating Profit to Sales, (This ratio is computed by dividing net profit from operations by net sales.)
2. Ratio of Net Operating Profit to Total Capital.
(Net profits from operations divided by the total invested capital in this case determines the ratio.)
3. Ratio of Sales to total capital is found by dividing net sales by the total invested capital.
4. Ratio of Operating Costs and Expenses to Sales.
(Operating costs divided by net sales give this

ratio.

5. Ratio of Net Profit to Sales is computed by dividing the net operating profit by net sales.
6. Ratio of Non-operating income to Net-operating profit. This ratio is found by dividing the net income, other than that from operations, by net Income from operations.
7. Ratio of Net Profit to Capital Stock. The profits divided by total capital stock determine this ratio.
8. Ratio of profit available for interest and interest charges. To obtain this ratio, net profits are divided by fixed charges.
9. Ratio of Net Profit to Property Account is found by dividing the net profit by net property, plus investments.¹

This list of ratios by no means exhausts the possible ratios, but it is large enough to give a satisfactory analysis for the executive. In this paper only three Income and Expense ratios were used. The list was limited to this number because much of the necessary information was not obtainable. Sales, Net Operating Profit, Operating Costs, Capital Costs, and non-operating Income were inaccessible. As was the case with the

1. Swanish, P. T., "Business Organization and Management." p. 150.

Working Capital Ratios, the figures used in computing Income and Expense Ratios were also taken either directly, or indirectly, from the standard Trade and Securities Service. Since corporations report their Profit and Loss Statements, and their Balance Sheets in their own desired form, it is necessary to group items under general heads so that there is a common basis of comparison. In the grouping of figures, the unobtainable quantities have been merged into more generic items.

Three ratios have been used to indicate the trend of Income and Expense ratios during the period of falling prices. If an exhaustive study were being made, three ratios would not be enough for a complete analysis. However, it seems safe to conclude that other Income and Expense ratios would show the same tendency as those which have been studied.

In the case of Working Capital Ratios, the figures necessary to compute ratios for 1926 were compiled, or were in such form that the computation could be made. In the case of the Income and Expense ratios, this has not been the case. Ratios for 1926, therefore, have been omitted. This does not substantially affect the conclusion, however, because the price changes from 1926 to 1927 have been nominal as compared to the price changes for the other five years studied.

The following ratios have been studied for the years 1927, 1928, 1929, 1930, and 1931:

1. Ratio of Net Profit available for interest and

interest charges.

2. Ratio of Net Profit to total invested capital.
3. Ratio of Net Profit to Net Property and long term investments.

Fixed charges, such as the interest on bonded indebtedness, must be met if the concern wishes to avoid receivership. If a concern is unable to earn its fixed charges, it must pay these charges from past income. Such a condition might exist for a short period without any serious consequence, Should it prevail year in and year out, such a condition would finally absorb the cash resources and past earnings of the business. The executive should, therefore, watch the ratio of Net Profit to Fixed Charges very carefully, especially if the ratio is low and is steadily declining.

Ratio of Net Profit to total invested capital shows the percentage of invested capital returned in the form of net profit. If the ratio is small, it either shows that too much capital is invested in the business, or else the invested capital is being used unprofitably. A declining ratio might mean that the invested capital has increased, or else that net profit has decreased. Either condition is a warning signal to the executive. An increasing ratio, on the other hand, shows a healthy condition, other things equal.

The ratio of Net Property and long term investments shows how efficiently the fixed assets of a business are being used. If, over a period of time, this ratio is low as compared

with other businesses in the same industry, it is evident that the industry with the low ratio is overbuilt. If the ratio is declining, one of two forces are operative. First, the business may be increasing its fixed assets more rapidly than the particular business warrants, or else, the profits of the business are declining. Both factors are warning signals for the executive. All things equal, an increase in the ratio shows a favorable trend because it informs the executive that his fixed assets are being used more efficiently.

Appendix "F" comprising 122 corporations shows that many corporations have no ratio of Net Profit to Fixed Charges. This is to be expected in cases where the capital structure is all common stock. Their financial position is good, for in a period of falling prices and declining profits, such corporate concerns need not worry about the meeting of fixed charges. The financial position of the company can be left unimpaired by passing the dividend when profits are small. Fixed charges, however, cannot be avoided. Another noticeable condition is the wide variation among the different corporations. An analysis of these variations shows that many of the corporations with high ratios have relatively low fixed charges. Many corporations have a negative ratio, suggesting that past earnings are being used to meet current expenses.

Table 12 compares this ratio and the price level for 122 corporations. The ratio of Net Profit to Fixed Charges was found by dividing the total net profits of those corpor-

TABLE 12.

COMPARISON OF WHOLESALE PRICES AND RATIO OF NET PROFIT
TO FIXED CHARGES

INDUSTRY	1927	1928	1929	1930	1931
<u>Meat Packing</u>					
Wholesale Commodity Price	92.6	107.3	109.1	98.4	73.6
Ratio of Net Profit to Fixed Charges	1.4	2.1	2.0	1.9	d.2
<u>Iron and Steel</u>					
Wholesale Commodity Price	95.9	94.9	97.3	91.6	86.6
Ratio of Net Profit to Fixed Charges	4.5	5.5	11.3	7.5	1.0
<u>Automobiles and Trucks</u>					
Wholesale Commodity Price	101.8	106.5	110.9	104.1	99.7
Ratio of Net Profit to Fixed Charges	39.1	18.8	6.6	d5.4	d2.6
<u>Textiles</u>					
Wholesale Commodity Price	95.7	96.3	93.7	80.8	62.9
Ratio of Net Profit to Fixed Charges	1.6	1.1	2.0	d2.3	d2.7
<u>Copper Mining</u>					
Wholesale Commodity Price	91.9	93.3	105.0	81.0	56.8
Ratio of Net Profit to Fixed Charges	2.7	5.8	9.6	8.4	..3
<u>Oil and Oil Producing</u>					
Wholesale Commodity Price	72.6	72.0	71.3	61.7	38.9
Ratio of Net Profit to Fixed Charges	4.8	9.4	10.5	3.8	.3
<u>Chemicals and Fertilizer</u>					
Wholesale Commodity Price	96.7	95.5	94.4	88.7	74.8
Ratio of Net Profit to Fixed Charges	-	6.2	8.0	11.7	2.7
<u>Machinery and Machine Equip.</u>					
Wholesale Commodity Price	100.2	97.2	98.5	98.1	90.5
Ratio of Net Profit to Fixed Charges	7.2	6.2	9.2	10.1	2.0
<u>Building Equip. and Supplies</u>					
Wholesale Commodity Price	93.7	93.7	97.1	90.3	74.9
Ratio of Net Profit to Fixed Charges	4.8	5.8	7.1	5.6	1.8

TABLE 12 CONT'D.

INDUSTRY	1927	1928	1929	1930	1931
<u>Food Products</u>					
Wholesale Commodity Price	96.5	101.0	99.7	90.2	72.9
Ratio of Net Profit to Fixed Charges	4.6	6.1	8.3	6.1	5.5
<u>Office and Business Equipment</u>					
Wholesale Commodity Price	100.2	97.2	98.5	98.1	90.5
Ratio of Net Profit to Fixed Charges	5.2	5.7	9.4	7.3	45.9
<u>Coal Mining</u>					
Wholesale Commodity Price	100.4	93.1	91.3	89.4	83.9
Ratio of Net Profit to Fixed Charges	d.7	1.2	1.3	1.3	1.0
<u>Total</u>					
Wholesale Commodity Price	95.4	97.7	96.5	86.4	69.1
Ratio of Net Profit to Fixed Charges	3.8	6.1	8.1	4.3	.5

ations, having fixed charges, by the total fixed charges of the corporations. A study of the table in detail shows certain definite trends.

In Meat Packing prices rose in 1928 and 1929; decreased in 1930 and 1931. The ratio moved upward in 1928; down in 1929, 1930, and 1931. With the exception of 1929, prices and the ratio moved in the same direction. Net Profit in this industry increased in 1928, but then declined in 1929, 1930, and 1931, while fixed charges decreased in 1928, increased slightly in 1929, and decreased in 1930 and 1931. The decrease in profit and increase in fixed charges in 1929 accounts for the lower ratio despite the increase in the price level. Meat Packing Industry is one of the three industries which has a negative ratio.

With one exception, i. e., 1928, the Iron and Steel Industry again reveals the same tendency of ratios and prices to move in the same direction. In 1928 prices move downward, and the ratio upward. In the year 1929 both price and ratio moved upward. In the years 1930 and 1931 both prices and the ratio moved downward. Net Profit moved upward in 1928 and 1929; downward in 1930 and 1931. Fixed charges move upward in 1928, and then tend to decline slightly in each of the succeeding years. The controlling factor in the ratio was net profit, which moved in the same direction as the price level with the exception of 1928.

The years 1928 and 1929 in the Automobile and Truck

Industry show declining ratios despite the fact that the price level was increasing. Profits in 1928, moved upward but fixed charges rose at a more rapid rate. This explains the lower ratio. In 1929 the fixed charges increased again, while profits dropped noticeably. The result is a lower ratio in spite of the fact that the price level increased. In 1930 and 1931 fixed charges dropped moderately, but net profits of corporations having fixed charges, changed into deficits, resulting in a negative ratio for the years 1930 and 1931.

The Textile Industry shows much the same trend as the Automobile and Truck Industry, i. e., for the years 1928 and 1929 the price level and the ratio Net Profit to Fixed Charges were in opposite directions, and a corresponding movement for both in the years 1930 and 1931. Prices move upward in 1928 while Net Profit and Fixed Charges move in the opposite direction. Fixed charges, however, changed at a slower rate, and this accounts for the lower ratio. Substantial increases in net profits accompanied by decreases in fixed assets caused the ratio to increase in 1929 despite the decrease in the price level. With fixed charges remaining very nearly constant in 1930 and 1931, net profits turned into deficits and negative ratios for these years. In Automobiles and Truck Industry the negative ratio in 1931 was smaller than in 1930, while in the Textile Industry the negative ratio in 1931 was greater than in 1930.

With no exception, prices and the ratio move in the

same direction in the Copper Mining Industry. Both move upward in 1928 and 1929; downward in 1930 and 1931. This movement was controlled by the net profits of the industry. While fixed charges gradually moved downward, net profit moved upward in 1928 and 1929; downward in 1930 and 1931.

Oil and Oil Producing is an exception in the years 1928 and 1929. In 1928 prices moved downward, while the ratio Net Profit to Fixed Charges doubled. In 1929 the ratio moved upward, while the price level again moved downward. The increase in the ratio is explained by the large increase in net profits. Fixed Charges moved upward in 1930, decreased slightly in 1931, while net profit dropped sharply in both years. Hence, with a drop in prices in 1930 and 1931, the ratio moved sharply downward.

In the Chemical and Fertilizer Industry prices moved downward in each succeeding year. The ratio, on the other hand, which was non-existent in 1927, (caused by no fixed charges being recorded) increased in 1929 and 1930, and decreased in 1931. The year 1931 was the only year in which prices and the ratio moved in the same direction. The reason for the increase in the ratio was the substantial increase in net profits in 1929 and 1930. In 1931, a sharp decline in the net profit is noticeable; consequently, a drop in the ratio. Both this industry and the Oil and Oil Producing Industry have a ratio of .3 in 1931, indicating that the interest charges were not earned in either industry.

The Machinery and Machine Equipment Industry shows the same tendency, 1930 being an exception. Prices moved downward in 1927; upward in 1928; downward in 1931, with corresponding movements in the ratio. In 1930 prices moved downward, while the ratio moved up. The lower ratio in 1928 is accounted for by the fact that fixed charges increased at a greater rate than the net profit. Net profit increased in 1929 and 1930, while fixed charges remained practically the same, and again the ratio increases markedly. Net profit in 1931 moved to about 20% of the 1930 level, and with the fixed charges remaining almost constant, the ratio dropped sharply.

Prices in the Building Equipment and Supply Industry remained the same in 1928, moved upward in 1929, and down in 1930 and 1931. The ratio moved upward in 1928 and 1929, and downward in 1930 and 1931. The year 1928 is an exception, and, although prices remain the same, the ratio increased. With this exception, both prices and the ratio moved in the same direction. Fixed charges remained substantially the same, until 1931, when they more than doubled. Net Profit increased in 1928 and 1929, and decreased in 1930 and 1931. Thus, the trend of the ratio has been governed by the net profit.

With the exception of 1929, the Food Products industry again shows this direct relationship of prices and the ratio Net Profit to Fixed Charges. In 1928 both the prices and ratio moved upward. This is explained by an increase in net

profit. Fixed charges moved upward, but less rapidly than the net profit. The year 1929 shows prices moving downward while the ratio moved upward. Again, the increase in the net profit was causal. In 1930 and 1931 the price level and ratio drop considerably. In 1930 this was due to the relatively greater increase in the fixed charges as compared with the increase in net profit, while the cause in 1931 was the drop in net profits while fixed charges remained practically the same.

The 1931 ratio in the Office and Business Equipment Industry must be explained in order that the unusually large figure becomes intelligible. Only two corporations in this industry have fixed charges, and in 1931 this figure was reduced to one. The one remaining industry was the industry which showed a continually high ratio, and, although the ratio was higher than in any other year, yet it is by no means out of proportion, for the increase is only 1% over that of 1930. In 1928 prices and the ratio move in the opposite directions. With the exception of these two years both the price level and the ratio moved in the same direction. The increase in the ratio in 1928 and 1929 was caused by the increase in net profit, while the decrease in the 1930 ratio was due to a decrease in net profit. The 1931 ratio, as was previously stated, was due to the extinction of the fixed charges of one of the corporations within the industry.

In the Coal Mining Industry, the year 1931 is the

only year in which the price level and ratio moved in the same direction. In 1928, with a decrease in the price level, we find an increase in the ratio; and again in 1929, with a slight decrease in the price level, we find an increase in the ratio. The price level again moved downward in 1930, while the ratio remained the same. The controlling factor in the ratio trend was again the net profit, which increased from a deficit in 1927 to a net profit in 1928, and then moved upward in 1929 and 1930, only to decline in 1931. Fixed charges also were a contributing factor because there was a slight increase in these charges each succeeding year.

For an analysis of all industries we find one exception to a direct movement in prices and the ratio. This exception occurs in 1929, for while the price level moved upward the ratio moved downward. In 1928 both the price level and the ratio moved upward, and in 1930 and 1931 both the price level and ratio moved downward. Table 15 shows this movement, and shows the cause by a comparison of the ratio and price level with the net profit and fixed charges of all industries studied.

In computing the ratio of Net Profit to total Invested Capital again the information for 1926 was not obtainable. There is, consequently, no ratio for that year. A study of all corporations, in Appendix "G", for the years 1927, 1928, 1929, 1930, and 1931 shows a mass of figures from which a trend could scarcely be determined. Wide variations appear

from industry to industry, and even between the corporations of the same industry.

TABLE 13. COMPARISON OF THE RATIO NET PROFITS TO FIXED CHARGES, PRICE LEVEL, NET PROFITS, AND FIXED CHARGES FOR ALL CORPORATIONS

Years	Net Profit in Millions	Fixed Charges in Millions	Ratio	Price Level
1927	\$479.30	\$126.74	3.8	95.4
1928	780.12	129.07	6.1	97.7
1929	939.41	116.16	8.1	96.5
1930	495.96	115.07	4.3	86.4
1931	50.06	109.68	.5	69.1

The ratio of Net Profits to total Invested Capital has again been computed by industries. The results appear in Table 14. The ratio for each industry was obtained by dividing the total net profit by the total invested capital of the same corporations. Invested Capital includes both preferred and common stock, plus all surplus and undivided profits. The ratio figure, in the total column, was obtained by dividing the total net profit of all corporations studied by their total invested capital. Price movements are again compared with the ratio, which, in this case, is Net Profit to Invested Capital.

No attempt will be made to analyze each industry separately. Instead, each year will be analyzed separately, and those corporations showing the same trend will be analyzed as a group. The method of analysis has been changed

TABLE 14. COMPARISON OF WHOLESALE PRICES AND RATIO OF NET PROFIT TO INVESTED CAPITAL

INDUSTRY	1927	1928	1929	1930	1931
<u>Meat Packing</u>					
Wholesale Commodity Price	92.6	107.3	109.1	98.4	73.6
Ratio of Net Profit to Inv't. Cap.	3.9	5.7	5.4	4.6	d.4
<u>Iron and Steel</u>					
Wholesale Commodity Price	95.9	94.9	97.3	91.6	86.6
Ratio of Net Profit to Inv't. Cap.	4.8	5.7	9.1	4.7	.7
<u>Automobiles and Trucks</u>					
Wholesale Commodity Price	101.8	106.5	110.9	104.1	99.7
Ratio of Net Profit to Inv't. Cap.	2.2	2.5	2.0	1.0	.4
<u>Textiles</u>					
Wholesale Commodity Price	95.7	96.3	93.7	80.8	62.9
Ratio of Net Profit to Inv't. Cap.	3.2	1.7	d1.0	d5.9	d5.9
<u>Copper Mining</u>					
Wholesale Commodity Price	91.9	93.3	105.0	81.0	56.8
Ratio of Net Profit to Inv't., Cap.	6.0	11.8	14.6	3.9	d.1
<u>Oil and Oil Producing</u>					
Wholesale Commodity Price	72.6	72.0	71.3	61.7	38.9
Ratio of Net Profit to Inv't. Cap.	4.6	8.9	8.8	3.9	d5.3
<u>Chemicals and Fertilizers</u>					
Wholesale Commodity Price	96.7	95.5	94.4	88.7	74.8
Ratio of Net Profit to Inv't. Cap.	15.11	18.5	18.5	12.2	7.5
<u>Machinery and Machine Equip.</u>					
Wholesale Commodity Price	100.2	97.2	98.5	98.1	90.5
Ratio of Net Profit to Inv't. Cap.	8.8	10.7	13.7	8.1	.6
<u>Building Equip. and Supplies</u>					
Wholesale Commodity Price	93.7	93.7	97.1	90.3	74.9
Ratio of Net Profit to Inv't. Cap.	11.3	11.7	11.8	7.7	2.9

TABLE 14 CONT'D.

INDUSTRY	1927	1928	1929	1930	1931
<u>Food Products</u>					
Wholesale Commodity Price	96.5	101.0	99.7	90.2	72.9
Ratio of Net Profit to Inv't. Cap.	16.5	16.4	16.7	15.3	13.9
<u>Office and Business Equipment</u>					
Wholesale Commodity Price	100.2	97.2	98.5	98.1	90.5
Ratio of Net Profit to Inv't. Cap.	12.9	14.0	18.2	12.3	9.2
<u>Coal Mining</u>					
Wholesale Commodity Price	100.4	93.1	91.3	89.4	83.9
Ratio of Net Profit to Inv't. Cap.	.4	2.2	2.5	2.1	1.2
<u>Total</u>					
Wholesale Commodity Price	95.4	97.7	96.5	86.4	69.1
Ratio of Net Profit to Inv't. Cap.	7.5	10.3	10.9	5.6	1.5

for this ratio and for the ratio Net Profit to Net Property account, because these ratios show a more definite trend than the previous ratios. This is especially true for the years 1930 and 1931.

The year 1928 shows three groups of corporations: (1) the group in which both the price level and ratio moved upward; (2) a group in which the price level moved downward, while the ratio moved upward; and (3) a group in which the price level moved upward, while the ratio moved downward. Building Equipment and Supplies Industry make up a fourth tendency, because in this industry price remained the same, while the ratio moved upward. An individual analysis will, therefore, be given it.

Meat Packing, Automobiles and Trucks, and Copper Mining, make up the first group in which both the price level and the ratio of Net Profit to Invested Capital have moved upward. In each one of these industries Net Profit followed the price level upward, while total Invested Capital remained practically the same. This accounts for the higher ratio.

Group 2 consists of the Iron and Steel, Oil and Oil Producing, Chemicals and Fertilizers, Machinery and Machine Equipment, Office and Business Equipment, and Coal Mining Industries. Again the ratio moved upward - this time, however, while the price level for the industries in question moved downward. This group, then, constitutes an exception to the noticeable tendency, i. e., the price level and ratio

move in the same direction. Increased Net Profits in each industry, despite the lower price level, were the cause for the higher ratios, because the total invested capital remained substantially the same.

The third group is made up of the Textile and Food Products Industries. Price level in both cases moved upward, while the ratio moved downward. The cause of the lower ratio in the case of the Textile Industry was the drop in net profit, and the slight increase in total invested capital. The lower ratio in the Food Products Industry was caused by the large increase in the total invested capital. Net Profits increased but not as rapidly as the invested capital.

Building Equipment and Supplies Industry makes up its own group, because it is the only industry in which the price level has not changed. The ratio, however, has moved upward and was caused by the relatively greater increase in net profit as compared with the increase in total invested capital.

We again find three general groups in 1929. Group 1 consists of those industries in which both the price level and ratio have moved in the same direction. This group is split up into those industries where both the price level and the ratio have moved downward, and those in which the price and ratio have moved upward. Group 2, in which prices have moved downward and the ratio upward, and lastly, we find Group 3 in which the price level moved upward while the ratio moved downward. Chemicals and Fertilizer Industry stands by itself,

and will be analyzed individually.

In the Iron and Steel, Copper Mining, Machinery and Machine Equipment, Building Equipment and Supplies, and Office and Business Equipment Industries the price level and the ratio of Net Profit to Invested Capital have both moved upward. The increased ratio in each case was caused by the increase in net profits while total invested capital remained the same, or, moved upward more slowly than the net profits.

Again in the Textile and Oil and Oil Producing Industries, both the price level and ratio moved in the same direction. This time, however, both moved downward. The decrease in the ratio in the Textile Industry was caused by the sharp drop in net profits, which changed to a net deficit. In the Oil and Oil Producing Industry, both net profits and total invested capital moved upward, but the latter moved up more rapidly, thus accounting for the lower ratio.

Food Products and Coal Mining are two industries in which there is an exception to the noticeable tendency, because here the price level and the ratio have moved in opposite directions. Prices have moved downward while the ratio moved upward. An increase in net profits, in spite of a declining price level, was the cause of the higher ratio.

Group 3 admits another exception of the general tendency. Here in the Meat Packing and Automobiles and Truck Industries, price level and ratio have moved in opposite directions. The price level moved upward, while the ratio

moved downward. Lower net profit in each case was the cause for the decrease in the ratio. Total invested capital moved downward in the Meat Packing Industry, but at a lower rate than the net profit. In the Automobiles and Truck Industry total invested capital increased while the total net profit was decreasing.

As was stated before, the Chemical and Fertilizer Industry stands alone, for while the price level decreased the ratio remained the same. Both the net profit and total invested capital increased, but the increases were at the same rate, thus accounting for the same ratio.

No groups are found in 1930 because the price level and the ratio Net Profit to Invested Capital have moved downward in all industries. With the exception of the Food Products Industry, net profits in each of the industries declined sharply. This is the main cause for the decline in the ratio. Total invested capital also increased in the Iron and Steel, Oil and Oil Producing, Chemical and Fertilizer, and Machinery and Machine Equipment Industries, thus helping to push the ratio still lower. The low ratio in the Food Products Industry is accounted for by the fact that total invested capital increased much more rapidly than the increase in net profits. Net Profits increased from \$116.8 million to \$121.0 million, while total invested capital increased from \$700.9 million to \$790.6 million.

The year 1931 has one exception to this tendency

which has been noted. This exception appears in the Textile Industry, for while the price level declined sharply, the ratio of Net Profit to Invested Capital remained the same. Net deficit in 1930, which was \$16.9 million, was reduced to a net deficit of \$13.4 million in 1931. Total invested capital, on the other hand, moved from \$284.3 million to \$225.0 million. In all of the other industries the price level and ratio have moved downward. The lower ratio was caused by the decline in Net Profits, which in some cases became net deficits. Negative ratios are recorded in the Meat Packing, Textile, Copper Mining, and Oil and Oil Producing Industries.

An analysis of all industries discloses the fact that the price level and the ratio of Net Profit to Invested Capital had corresponding movements with the exception of 1929. Prices and the ratio moved upward in 1928, downward in 1930 and 1931. In 1929 the price level moved downward, while the ratio moved upward. This tendency for the ratio to increase, in spite of the fall in prices, can be accounted for by the fact that prices in the beginning of 1929 were moving upward. Gains in the early part of 1929, therefore, offset the losses in the latter part of 1929. Because the change in net profit was always great, as compared with the change in the total invested capital, net profit became the active factor in determining the movement of the ratio. Table 15 shows the cause of this movement by showing a comparison of total net profits, total invested capital, ratio of net profits to invested

capital, and price level for all corporations.

TABLE 15 COMPARISON OF THE RATIO NET PROFIT TO INVESTED CAPITAL, GENERAL PRICE LEVEL, TOTAL NET PROFITS, AND TOTAL INVESTED CAPITAL FOR ALL INDUSTRIES.

Years	Total Net Profits in Millions	Total Invested Capital in Millions	Ratio	Price Level
1927	\$ 936.89	\$12514.93	7.5	95.4
1928	1359.35	13207.53	10.3	97.7
1929	1547.68	14165.15	10.9	96.5
1930	796.49	14309.41	5.6	86.4
1931	201.59	13298.92	1.5	69.1

Net Profit to Net Property ratio was found by dividing the net profit by net property plus long term investments. Net Profits to Net Property ratio shows a tendency which is very nearly the same as that of the ratio Net Profit to Invested Capital. A study of the 122 corporations, as may be seen in Apptneix "H" also shows wide variations between the different corporations, that are even more pronounced than in the case of the ratio Net Profit to Invested Capital.

In order to see the tendency shown by the ratio Net Profit to Net Property, we must turn again to a study of the ratio by industries. Table 16 shows a comparison of the ratio and the price level by industry. The ratio for each industry was computed by dividing the total net profit of the corporations studied in that industry, by the total of the net

property and long term investment accounts. The total column represents the ratio of all industries. This was obtained by dividing the net profit of all corporations examined by the total of net property and long term investments of the same corporations.

The year 1928 shows three groups of tendencies; Group 1 in which both the ratio and price level moved in the same direction; Group 2 in which the price level moved downward, while the ratio moved upward; and Group 3 where the price level moved upward while the ratio moved downward.

Meat Packing, Automobiles and Trucks, and Copper Mining Industries comprise the first of the above groups, in which both the price level and the ratio moved upward. In each case the movement of the ratio was caused by an increase in the net profit while the other factors remained substantially the same.

Group 2 consists of the Iron and Steel, Oil and Oil Producing, Chemical and Fertilizer, Machinery and Machine Equipment, Office and Business Equipment, and the Coal Mining Industries. In every case the price level moved downward while the ratio moved upward. Net Profits for these industries increased in spite of the lower price level. Increase in Net Profits, therefore, was the cause of the increased ratio.

Two industries, the Textile Industry, and the Food Products Industry comprise the third group in which the price movement was upward while the ratio movement was downward. In

TABLE 16. COMPARISON OF WHOLESALE PRICES AND RATIO OF NET PROFIT TO NET PROPERTY.

INDUSTRY	1927	1928	1929	1930	1931
<u>Meat Packing</u>					
Wholesale Commodity Price	92.6	107.3	109.1	98.4	73.6
Ratio of Net Profit to Net Property	7.1	10.7	9.9	8.2	d.6
<u>Iron and Steel</u>					
Wholesale Commodity Price	95.9	94.9	97.3	91.6	86.6
Ratio of Net Profit to Net Property	6.0	7.3	12.4	6.0	.9
<u>Automobiles and Trucks</u>					
Wholesale Commodity Price	101.8	106.5	110.9	104.1	99.7
Ratio of Net Profit to Net Property	43.4	45.0	32.4	6.0	.9
<u>Textiles</u>					
Wholesale Commodity Price	95.7	96.3	93.7	80.8	62.9
Ratio of Net Profit to Net Property	6.2	3.3	d.2	d10.3	d9.6
<u>Copper Mining</u>					
Wholesale Commodity Price	91.9	93.3	105.0	81.0	56.8
Ratio of Net Profit to Net Property	7.5	17.0	18.9	4.7	d1.4
<u>Oil and Oil Producing</u>					
Wholesale Commodity Price	72.6	72.0	71.3	61.7	38.9
Ratio of Net Profit to Net Property	6.9	12.1	12.3	5.2	d.7
<u>Chemicals and Fertilizer</u>					
Wholesale Commodity Price	96.7	95.5	94.4	88.7	74.8
Ratio of Net Profit to Net Property	29.6	33.9	32.4	21.9	13.1
<u>Machinery and Machine Equipment</u>					
Wholesale Commodity Price	100.2	97.2	98.5	98.1	90.5
Ratio of Net Profit to Net Property	19.3	20.9	27.9	17.5	1.3
<u>Building Equip. and Supplies</u>					
Wholesale Commodity Price	93.7	93.7	97.1	90.3	1.3
Ratio of Net Profit to Net Property	18.9	19.3	19.8	12.9	4.3

TABLE 16 CONT'D.

INDUSTRY	1927	1928	1929	1930	1931
<u>Food Products</u>					
Wholesale Commodity Price	96.5	101.0	99.7	90.2	72.9
Ratio of Net Profit to Net Property	34.4	31.6	30.8	27.8	26.0
<u>Office and Business Equipment</u>					
Wholesale Commodity Price	100.2	97.2	98.5	98.1	90.5
Ratio of Net Profit to Net Property	48.5	48.8	54.3	32.0	30.5
<u>Coal Mining</u>					
Wholesale Commodity Price	100.4	93.1	91.3	89.4	83.9
Ratio of Net Profit to Net Property	.5	2.5	3.1	2.5	1.5
<u>Total</u>					
Wholesale Commodity Price	95.4	97.7	96.5	86.4	69.1
Ratio of Net Profit to Net Property	11.1	14.9	16.1	8.0	2.1

the case of the Textile Industry the lower ratio is accounted for by the lower net profit, while the lower ratio in the Food Products Industry was caused by the increase in the net property account moving at a greater rate than the increase in the net profits.

Building Equipment and Supplies Industry is again in a class by itself. The price level remained the same, while the ratio increased. Net Property and Net Profit both increased but the latter increased at a higher rate. This accounts for the higher ratio in 1928.

The same three groups are again found in the year 1929. In the first group, where both the price level and ratio moved in the same direction, we find one sub-group in which both movements were downward; the other sub-group in which both movements were upward. The Textile, Chemical and Fertilizer, and Food Products Industries comprise that sub-group in which both the price level and ratio moved downward. The downward movement in the Textile Industry was caused by the decrease in Net Profits, while the downward movement in the other industries was caused by the large increase in the net property account. In both cases the net property account increased at much greater rate than the increase in net profit. In the other sub-group, upward movements for both price level and ratio were recorded in the Iron and Steel, Copper Mining, Machinery and Machine Equipment, Building Equipment and Supplies, and Office and Business Equipment Industry. In all cases in these indus-

tries the increase was due to the increase in net profits.

Prices moved downward and the ratio moved upward in Group 2, which consists of the Oil and Oil Producing and the Coal Mining Industries. Both net profits and net property increased, however, as the former was at a greater rate it caused the ratio to increase.

In the Meat Packing and Automobiles and Trucks Industry, again, the price level and ratio moved in opposite directions. For this third group the price level moved upward, while the ratio moved downward. The ratio movement was caused by a decrease in net profits, while the net property account was increasing.

Without exception, both the price level and the ratio in 1930 moved downward. In all cases, except one, the downward movement of the ratio was caused by the notable decline of net profits. The one exception was the Food Products Industry. In this industry net profits increased slightly, but the net property account increased at a greater rate, thus explaining the lower ratio.

One exception, the Textile Industry, appears in the years 1931. With this exception, all of the industries showed the same movement - both the price level and the ratio movement were downward. In the Textile Industry the price movement was also downward, while the ratio increased. This increase was due to the decrease in the net deficit. The decrease in the ratio in all other cases was due to a decrease

in net profits.

For all industries the price level moved upward in 1928, and downward in 1929, 1930 and 1931. On the other hand, the ratio moved upward in 1928 and 1929, and downward in 1930 and 1931. With the exception of 1929, the movement of the price level and ratio was in the same direction. Table 17 gives the cause of this movement by showing a comparison of total net profits, net property account, long term investments, the ratio, and price level for all corporations.

TABLE 17 COMPARISON OF RATIO OF NET PROFIT TO NET PROPERTY, PRICE LEVEL, NET PROFITS, AND NET PROPERTY FOR ALL CORPORATIONS.

Year	Total Net Profits in Millions	Total Net Property in Millions	Total Long Term Invsts. in Millions	Ratio	Price Level
1927	\$ 936.89	\$7651.50	\$ 787.47	11.1	95.4
1928	1359.35	8035.45	1080.67	14.9	97.7
1929	1547.68	8533.65	1088.68	16.1	96.5
1930	796.49	8943.97	1088.37	8.0	86.4
1931	210.59	8754.86	997.18	2.1	69.1

Income and Expense ratios show a very pronounced tendency to move in the same direction as the price level. In most instances this was due to the movement of net profit which usually followed the price level. The tendency showed by these ratio, therefore, is exactly opposite of the tendency showed by the Working Capital Ratios.

CHAPTER V

CONCLUSION.

Writers on the subject of financial ratios continually refer to the fact that the analyst must take into consideration the phase of the business cycle when examining the ratios of a particular business. They further point out that no single ratio gives an adequate picture of the business. Again, all are agreed that the mathematical proportion should be so stated that an increase in the ratio would show a favorable trend, while a decrease would show an unfavorable trend in the financial condition of the business. Finally, it is an accepted conclusion that the type of industry must be taken into consideration, because of the dissimilarity of the commodities produced in the different industries. How have these ideas been borne out in this study?

Table 18 shows a list of the six ratios of the 122 corporations compared with the price level for the period studied.

With the exception of the ratio Working Capital to Inventory, this study definitely shows that the writers are correct in concluding that the phase of the business cycle must be taken into consideration. Even the Working Capital to Inventory ratio shows some variation from 1926 to 1931. In 1926, with the price level at 100, this ratio was 1.5,

while in 1931, with the price level at 69.1, the ratio moved upward to 1.8. It is believed that the 122 corporations used were sufficient for a representative study and also that the six ratios would adequately show the tendency of the other ratios which are used by the executive. If the writer is correct in this belief, we might well ask: Of what use are financial standards?

TABLE 18 COMPARISON OF THE PRICE LEVEL AND SIX RATIOS.

Year	Price Level	Current Asset Ratio	Acid Test	Working Capital Inv't'y.	Net Profit to Fixed Charges	Net Profit to Invst'd Capital	Net Profit to Property Account
1926	100.0	3.9	2.0	1.5	--	--	--
1927	95.4	4.4	2.2	1.5	3.8	7.5	11.1
1928	97.7	4.3	2.3	1.7	6.1	10.3	14.9
1929	96.5	4.4	2.3	1.6	8.1	10.9	16.1
1930	86.4	4.9	2.6	1.7	4.3	5.6	8.0
1931	69.1	5.8	3.2	1.8	.5	1.5	2.1

Certainly the same standard cannot be applied to 1926 and 1931. The 1931 Current Asset ratio was 150% of the 1926 ratio - having increased from 3.9 in 1926 to 5.8 in 1931. In the case of the "Acid Test" the increase is even greater, for here the ratio increased 60% from 1926 to 1931; the change being from 2.0 in 1926 to 3.2 in 1931. A 20% increase is also recorded for the Working Capital to Inventory ratio. Again with regard to the Income and Expense ratios we find marked changes from 1926 to 1931. Net Profit to Fixed Charges

moved from 3.8 in 1927 to .5 in 1931, or, expressed in percentages, the 1931 ratio was 13% of the 1927 ratio. Expressed in the same way, Net Profit to Invested Capital ratio in 1931 was 20% of the 1927 ratio, and the Net Profit to Net Property in 1931 was 19% of the 1927 ratio. Tables 19 and 20 show this movement expressed in index numbers. Current Asset ratio and the "Acid Test" ratio have increased approximately 2% for every 1% decrease in price, while the Working Capital to Inventory ratio has increased about .7% for every 1% decrease in price. The decrease, in the case of the Income and Expense ratios, has been roughly three times as great as the decrease in the price level. While we cannot definitely lay down a law that the price level and a certain ratio moves at a certain rate, yet we can conclude that no set standard can be used for financial ratios.

TABLE 19 COMPARISON OF THE INDEX NUMBERS OF THE WORKING CAPITAL RATIOS FOR 122 CORPORATIONS FOR THE YEARS 1926 AND 1931.

	1926	1931
Price Level	100.0	69.1
Current Asset Ratio	100.0	149.0
"Acid Test"	100.0	160.0
Working Capital to Inventory	100.0	120.0

We may, however, point out the following tendencies with regard to the ratios studied. Working Capital ratios tend to move in an opposite direction to the price level;

Income and Expense ratios tend to move in the same direction as the price level.

TABLE 20 COMPARISON OF THE INDEX NUMBERS OF THE INCOME AND EXPENSE RATIOS OF 122 CORPORATIONS FOR THE YEARS 1927 AND 1931.

	1927	1931
Price Level	100.0 ¹	73.5
Net Profit to Fixed Charges	100.0	13.2
Net Profit to Invested Capital	100.0	20.0
Net Profit to Property Account	100.0	18.9

A study of Table 18 again supports the statement that no single ratio gives an adequate picture of the condition of a business. A study of either the Current Asset or "Acid Test" ratios, without reference to the price level or other ratios, would give one the impression that on the average, all of the corporations studied are in a better financial condition in 1931 than in 1926. But this is not true. This leads to a consideration of the third proposition held by writers, namely, that the mathematical proportion should be so erected that an increase in the ratio would show a favorable trend.

While there is no doubt that the increase in the Working Capital ratio does show a favorable working capital position, yet, on the other hand, the corporations are in an un-

1. With 1926 as the base year, the price level for 1927 was 95.4, and for 1931 was 69.1. In this illustration 1927 has been used as the base year.

favorable financial position because their ability to meet fixed charges has been placed in jeopardy. In 1931 those corporations having fixed charges only earned one-half of their fixed charges, consequently, in order to pay these fixed charges, they were forced to dip into past earnings. This condition cannot go on indefinitely. Corporations, therefore, might and, as a matter of fact did, show a favorable working capital position, while the condition of the business, as a whole, was very unfavorable.

Before taking the .5 ratio in 1931 of Net Profit to Fixed Charges too seriously, however, the following change should be noted. Only those corporations having fixed charges were used in calculating this ratio. If we take the total net profit for the 122 corporations studied and divide by their total fixed charges, we would get a ratio of 1.8 in 1931. This would compare with a ratio of 7.4 in 1926. Our conclusion, then, that certain ratios might show a favorable trend, despite the fact the business is in a very bad financial condition, still holds true. But the seriousness of the .5 ratio in 1931 of Net Profit to Fixed Charges has been diminished. Whereas, those corporations having fixed charges earned only one-half of the fixed charges in 1931, on the average, the 122 corporations studied earned their fixed charges 1.8 times.

Throughout the study the fundamental position that the type of industry must be taken into consideration, has been upheld. This is true because the factors of production are

combined in different proportions in order to attain the maximum profit.

Writers of economic theory point out that, in a period of falling prices, it is better to be owed than to owe, that inventories should be curtailed, and that profits will decline. All of these deductions have been confirmed by this study. Current Asset and "Acid Test" ratio have increased because the current debt was decreased more rapidly than the decrease in current assets. Working Capital to Inventory ratio increased because the inventory decreased at a greater rate than the rest of the Current Assets. And, finally, the Income and Expense ratios all decreased because Net Profit decreased while fixed charges, net property, and invested capital remained practically stationary.

The following conclusions have been found and should be used in making a financial analysis: (1) the phase of the business cycle must be taken account of; (2) standards are not reliable and, if used, should take account of underlying changes in business; (a) Working Capital ratios tend to move in an opposite direction to the price level, and (b) income and expense ratios tend to move in the same direction as the price level; (3) no one ratio is adequate for an analysis; (4) although some ratios might be increasing, the increase might be unfavorable for the business as a whole; and, finally, (5) the type of industry must be taken into consideration. Moreover, statistics of the past six years have proven, without

a doubt, that the economic theorists who maintain that inventories should be curtailed, debts should be paid, and that profits will decrease in a period of falling prices, have been correct in their deductions.

BIBLIOGRAPHY

- Barnes, A. F., "I Never Judge a Statement on Any One Ratio." System, October, 1926, 406-413.
- Bliss, James Harris, Financial and Operating Ratios in Management. (Ronald Press Company, New York, 1923).
- Bonneville, Joseph Howard, Elements of Business Finance. (Prentice Hall Inc., New York, 1927).
- Clark, Fred E., Principles of Marketing. (The Macmillan Company, New York, 1929).
- Crum, W.L., "Balance Sheets of American Corporations by Major Classifications." Corporate Practice Review, November, 1931, 51-62.
- Dutton, H. P., "Management Ratios," Factory and Industrial Management, December, 1929, 1339-1340.
- Faulkner, Harold U., American Economic History. (Harper and Brothers Publishers, New York).
- Fisher, Irving, Elementary Principles of Economics. (The Macmillan Company, New York, 1928).
- Fisher, Irving, The Purchasing Power of Money. (The Macmillan Company, New York, 1926).
- Garver, F. B., and Hansen, Alvin H., Principles of Economics. (Ginn and Company, New York, 1928).
- Gilman, Stephen, Analyzing Financial Statements. (The Ronald Press Company, New York, 1925).
- Gregory, Homer E., "Current Ratio a Function of Two Variables." Accounting Review, September, 1930, 254-256.
- Guthman, Harry George, The Analysis of Financial Statements. (Prentice Hall Inc., New York, 1925).
- Harper, F. H., Elements of Practical Statistics. (The Macmillan Company, New York, 1930).
- Harrison, G. Charter, Standard Costs. (The Ronald Press Company, New York, 1930).

Hazlewood, C. B., "Looking Beyond the Financial Statement," System, November, 1926, 565-566.

Hemingway, Wilfrid, H., Hemingway's Financial Chart. (The Hemingway Institute, San Francisco).

Johnson, Norris O., and Shirer, John T., "Certain Aspects Of the Interpretation of Price Earning Ratios," Journal of the American Statistical Association Supplement, March, 1930, 106-112.

Kasch, F. M., "Feeling the Pulse of a Business," System, June, 1926, 763-765.

Knoeppel, C. E., "When is a Business Out of Bonds?" Factory and Industrial Management, February and March, 1931, 235-237, 421-423.

Marshall, Alfred, Money, Credit, and Commerce. (Macmillan and Co., London, 1928).

Marshall, L. C., "Offerings in Economics," Journal of Political Economy, October, 1927, 523.

Martinette, Frederick A., Financial Statements and Their Analysis. (Smith-Digby Company, Washington, 1926).

Meech, Stuart P., and McKinsey, James O., Controlling the Finances of a Business. (The Ronald Press Company, New York, 1923).

Mills, Frederick C., Statistical Methods. (Henry Holt and Company, New York, 1924).

Mitchell, Wesley C., Business Cycles. (National Bureau of Economic Research, New York, 1927).

Montgomery, John Knowles, Is There a Theoretical Correct Price Index of a Group of Commodities? (L'Universal Tipogr. Poliglota, Roma, 1929).

Paton, W. A., (Editor), Accountants Handbook, Second Edition, (The Ronald Press Company, New York, 1932).

Persons, Warren Milton, The Construction of Index Numbers. (Houghton Mifflin Company, Boston, New York, 1928).

Prochazka, G. A. Jr., "Controlling Costs by Their Variations," Industrial Management, March, 1927, 147-150.

Schwulst, E. B., "Merchandise Turnover As a Credit Factor," Bankers Monthly, December, 1927, 24.

Stoddard, W. L., "How to Read a Balance Sheet," Outlook, February 11, 1925, 234-236.

Strain, Myron M., Industrial Balance Sheets; a Study in Business Analysis. (Harper and Brothers, New York and London, 1929).

Swanish, P. T., Business Organization and Management. Mimeo-graphed Edition, 1930.

Wall, Alexander, and Dunning, R. W., Ratio Analysis of Financial Statements. (Harper and Brothers, New York and London, 1928).

Winakor, Arthur, H., "Ratios Useful Only When Based on Uniform Classification of Items," American Accountant, July, 1929, 375-377.

-----, Index Number Institute, New Haven, Conn.

-----, "Translating a Balance Sheet Into Words of One Syllable," New York Times Annalist, May 2, 1921.

-----, "Money, and Index Numbers," Journal of the Royal Statistical Society, Vol. XCIII, Part 1, 1930, 65.

-----, "Beneath the Surface of Corporation Statement," Standard Trade and Securities Service, Volume 49, August 6, 1928, Section 25.

-----, "Base Book Standard Earnings Bulletin," Standard Trade and Securities Service, Volume 62, Number 18, November, 1931, Section 2.

-----, "Base Book Standard Earnings Bulletin," Standard Trade and Securities Service, Volume 65, Number 21, August 17, 1932, Section 1.

-----, "Base Book Standard Earnings Bulletin," Standard Trade and Securities Service, Volume 63, Number 7, January, 1932, Section 3.

-----, "Base Book Standard Earnings Bulletin," Standard Trade and Securities Service, Volume 1, January 1928, General Section.

-----, "Standard Financial Ratios for the Public Utility Industry," University of Illinois Bulletin, Bulletin Number 26.

APPENDIX "A"

CURRENT ASSET RATIO FOR THE 122 CORPORATIONS STUDIED.

CORPORATIONS	1926	1927	1928	1929	1930	1931
Meat Packing						
Armour and Company	3.9	3.8	6.0	5.2	7.2	10.1
Cudahy Packing Company	3.5	2.9	2.2	2.5	3.3	5.8
Swift and Company	6.4	7.0	4.5	3.8	6.2	5.8
Wilson and Company (Class A)	5.9	7.7	8.7	6.4	9.2	9.4
Total	4.7	4.8	4.7	4.2	6.3	7.3
Iron and Steel						
United States Steel Corporation	4.9	4.9	5.0	4.6	5.3	7.7
American Rolling Mill Company	5.8	2.7	4.2	2.8	7.1	6.7
Bethlehem Steel Corporation	5.0	4.9	4.8	4.7	4.0	5.6
Colorado Fuel and Iron Company	2.0	2.4	2.6	3.7	4.1	4.4
Byers (A.M.) Company	7.5	11.2	13.0	7.6	4.3	16.6
Vulcan Detinning Company	3.7	3.4	3.8	2.8	2.9	2.8
Gulf States Steel Company	3.8	10.6	6.5	7.7	2.0	2.6
Inland Steel Company	5.9	7.5	7.6	8.2	7.6	5.2
Ludlum Steel Company	10.0	8.0	6.5	5.6	19.2	21.1
Warren Foundry and Pipe Company	9.7	20.2	18.9	12.8	8.6	9.7
Youngstown Sheet and Tube Company	4.8	8.1	7.2	6.2	6.6	12.1
Total	4.8	5.0	5.1	4.8	5.1	7.2
Automobiles and Trucks						
Chrysler Corporation	3.4	4.2	3.4	4.8	6.5	6.7
General Motors Corporation	2.3	2.7	2.7	3.1	4.4	4.2
Graham-Paige Motors Corporation	2.3	2.3	2.0	4.2	3.0	1.8
Hudson Motor Car Company	3.3	2.9	3.3	4.2	4.7	4.1
Hupp Motor Car Corporation	5.7	5.7	6.3	8.3	9.3	6.5
Mack Trucks Inc.	8.9	4.0	5.0	6.1	15.6	19.8
Nash Motors Company	3.6	5.4	5.5	6.0	7.5	14.7
Packard Motor Car Company	3.2	3.3	2.8	3.5	5.7	7.9
Peerless Motor Car Corporation	10.9	7.6	3.9	4.1	7.2	14.0

APPENDIX "A" CONT'D.

CORPORATIONS	1926	1927	1928	1929	1930	1931
Reo Motor Car Company	7.4	8.8	4.7	8.3	10.5	8.9
Studebaker Corporation	4.6	3.5	3.2	3.6	2.8	2.2
White Motor Company	8.8	8.2	8.5	10.1	14.5	17.4
Willys Overland Company	4.2	4.9	3.3	4.7	3.5	2.4
Yellow Trucks and Coach Mfg. Company	8.1	7.0	4.8	7.3	7.5	7.9
Total	3.2	3.3	3.2	4.0	5.1	4.9
Textiles						
Cotton and Cotton Goods						
Consolidated Textile Corporation	11.0	6.5	3.6	3.4	4.6	23.6
Nashawena Mills	1.6	1.8	1.8	1.9	1.8	1.7
Naumkeag Steam Cotton	10.9	8.3	23.1	19.9	6.2	7.3
Pacific Mills	36.5	42.6	40.4	18.8	27.2	24.2
Pepperell Manufacturing Company	-	15.2	19.9	45.0	32.9	45.0
Standard Textile Production Company	3.0	-	8.7	2.4	5.3	3.7
sub-total	11.1	11.8	11.0	7.6	9.5	11.2
Silk and Silk Goods						
Belding Heminway Company	42.8	63.3	40.6	23.3	64.6	19.4
Blumenthal (Sidney) and Company	2.8	3.4	5.1	9.5	25.3	38.8
Century Ribbon Mills	2.5	2.3	2.7	2.5	2.5	2.8
Mallinson(H.R.) and Company	2.4	2.7	2.4	2.1	1.6	1.9
sub-total	4.2	4.3	4.5	4.9	4.8	6.0
Wool and Woolen Goods						
American Woolen Company	4.7	10.7	10.1	46.7	73.3	170.9
Arlington Mills	2.2	2.3	3.7	3.8	4.0	2.7
Botany Consolidated Mills Inc.	2.1	2.3	3.7	2.7	8.2	3.6
Cleveland Worsted Mills Company	-	3.2	3.8	2.1	2.0	16.9
sub-total	3.4	4.8	6.6	7.9	14.8	13.3
Total	4.5	5.8	6.3	7.0	10.1	10.9

APPENDIX "A" CONT'D.

CORPORATIONS	1926	1927	1928	1929	1930	1931
Copper Mining						
Anaconda Copper Mining	5.8	3.6	2.3	2.3	2.0	1.6
Calumet and Hecla Cons. Corporation	10.9	10.0	9.8	8.5	8.9	7.0
Cerro de Pasco Copper Corporation	8.4	7.2	8.8	9.6	15.3	17.3
Chile Copper Company	3.3	2.0	3.8	in Anaconda Copper		
Greene Cananea	13.2	19.7	4.0	in Anaconda Copper		
Howe Sound Company	2.0	4.9	4.9	4.9	6.4	-
Inspiration Cons. Copper	2.5	5.8	4.4	2.8	4.0	1.9
Kenecott Copper Corporation	3.6	7.3	3.9	4.2	5.2	8.6
Magna Copper Corporation	4.9	4.8	5.2	5.2	10.0	17.1
Miami Copper Corporation	8.6	9.5	8.5	4.8	5.2	-
Nevada Cons. Copper	6.0	5.9	5.2	6.1	5.4	3.9
Total	5.1	4.6	3.5	3.2	3.1	2.5
Oil and Oil Producing						
Atlantic Refining Company	6.9	5.8	5.7	7.5	11.0	6.8
Barnsdall Corporation (Class A)	4.0	1.3	6.7	4.4	2.3	2.0
Gulf Oil Corporation of Pennsylvania	2.8	5.2	7.9	6.4	6.7	7.4
Houston Oil Company of Texas	1.2	.06	3.6	3.2	5.0	3.9
Humble Oil and Refining Company	2.5	5.1	5.1	4.0	5.6	6.7
Phillips Petroleum Company	2.0	6.6	4.6	4.0	1.7	1.3
Pure Oil Company	2.1	6.8	4.8	5.2	2.5	2.2
Shell Union Oil Corporation	3.4	5.0	3.1	4.5	3.6	4.0
Simms Petroleum Company	5.0	4.2	9.2	7.2	7.4	5.7
Sinclair Cons. Oil Company	2.6	3.2	5.8	3.1	4.8	-
Skelly Oil Company	1.3	3.9	2.0	1.7	2.4	4.6
Standard Oil Company of New Jersey	3.3	11.0	4.9	4.6	4.3	7.8
Texas Corporation	4.8	4.5	2.9	6.9	7.1	6.8
Tide Water Association Oil	3.8	4.3	4.4	3.9	5.8	5.1
Union Oil of California	5.8	6.0	5.1	6.9	8.5	10.6
Total	3.3	5.0	4.6	4.9	4.7	6.1

APPENDIX "A" CONT'D.

CORPORATIONS	1926	1927	1928	1929	1930	1931
Chemicals and Fertilizers						
Air Reduction Company Inc.	10.3	6.9	7.0	7.5	8.8	11.8
American Cyanamid Company	2.8	4.6	4.0	3.4	4.7	6.9
Atlas Powder Company	6.2	11.0	9.8	13.0	14.5	22.4
Columbian Carbon Company	5.9	7.5	6.8	6.6	12.2	10.3
Freeport Texas Company	6.7	4.3	3.3	3.4	2.2	2.7
Hercules Powder Company	30.5	15.8	12.8	15.8	25.6	24.1
U. S. Industrial Alcohol Company	5.1	6.6	5.7	5.7	5.1	14.2
Texas Gulf Sulphur Company	25.0	12.3	24.9	13.6	15.9	12.8
Total	8.2	7.9	7.2	6.8	7.0	9.2
Machinery and Machine Equipment						
Allis Chalmers Manufacturing Company	5.8	5.3	4.9	3.8	6.3	7.5
American Machine Foundry Company	9.0	12.5	13.9	10.7	14.5	6.0
Bliss (E.W.) Company	8.8	9.9	6.8	6.2	6.5	3.2
Caterpillar Tractor Company	-	6.1	1.1	3.2	16.5	31.7
National Acme Company	14.7	16.4	7.0	7.7	18.5	29.9
National Supply Company of Delaware	6.7	10.7	8.9	8.1	21.5	36.3
Seagrave Corporation	3.1	3.2	4.1	8.9	8.3	6.8
Total	6.6	7.5	4.5	4.6	11.4	11.8
Building Equipment and Supplies						
Alpha Portland Cement Company	9.3	6.4	7.3	8.9	13.5	21.9
International Cement Corporation	4.1	2.8	4.9	5.2	4.6	7.1
Warren Brothers Company	1.7	1.3	2.2	2.0	2.1	2.6
American Seating Corporation	9.2	12.6	16.9	24.9	42.2	26.5
Celotex Company	1.2	2.3	2.6	1.5	2.6	3.5
Johns-Manville Corporation	5.9	5.2	3.7	3.2	3.6	5.4
Devco and Reynolds	11.0	8.5	2.8	8.1	16.5	18.9
Foundation Company	10.6	2.8	3.2	2.7	2.1	1.6
Sherwin-Williams Company	5.4	6.9	6.7	6.4	10.0	8.1
Total	5.2	4.3	4.3	4.1	4.6	6.8

APPENDIX "A" CONT'D.

CORPORATIONS	1926	1927	1928	1929	1930	1931
Food Products						
Baking Products and Flour						
Pillsbury Flour Mills	3.2	3.2	3.7	2.5	1.9	7.2
Purities Bakeries Corporation	4.8	-	6.3	3.2	3.5	4.2
sub-total	3.4	3.2	6.8	2.7	2.2	6.0
Candy, Soft Drinks and Chewing Gum						
Coca-Cola Company	10.6	24.7	8.2	6.2	6.5	5.3
Hires (Chas. E.) Company	5.2	4.0	4.4	4.1	4.4	6.6
Sweets Company of America Inc.	11.7	9.0	7.8	8.0	5.7	3.5
Wrigley (Wm.Jr.) Company	12.3	6.1	6.3	9.2	10.1	10.7
sub-total	11.7	7.8	6.8	7.9	8.4	8.2
Dairy						
Borden and Company	3.3	3.3	3.3	2.2	2.8	3.9
National Dairy Products Corporation	1.6	1.5	2.6	2.7	3.2	3.5
Southern Dairies Inc.	.7	2.7	4.1	4.4	3.2	3.2
U. S. Dairy Products Corporation	.8	1.5	1.5	1.5	1.4	1.4
sub-total	2.1	2.3	3.0	2.4	2.9	3.5
Miscellaneous						
Beechnut Packing Company	5.4	11.0	11.6	12.5	17.7	13.8
General Foods Corporation	-	3.4	4.2	3.6	5.3	6.6
National Distillers Pro. Corporation	-	8.7	9.2	6.5	7.0	7.6
Quaker Oats Company	5.5	5.2	5.6	4.2	5.7	6.6
Wesson Oil and Snowdrift Company	8.5	2.9	5.5	12.3	11.3	14.7
sub-total	6.0	4.1	5.4	5.3	7.1	8.3
Total	3.7	3.6	4.3	3.6	4.3	5.3
Office and Business Equipment and Supplies						
Art Metal Construction Company	5.8	8.4	8.2	6.3	6.7	7.4
Burroughs Adding Machine Company	7.4	10.7	11.2	10.5	13.6	18.9
General Fireproofing Company	3.4	7.2	5.6	4.8	4.5	4.5
International Business Machine Company	5.4	5.4	4.7	3.8	3.7	3.9

APPENDIX "A" CONT'D.

CORPORATIONS	1926	1927	1928	1929	1930	1931
Office and Business Equipment & Supplies, Cont'd.						
National Cash Register Company	5.4	5.9	4.7	4.1	6.1	9.1
Remington Rand Incorporated	6.3	7.0	8.4	7.7	11.9	-
Total	5.8	7.0	6.7	6.0	7.9	8.8
Coal Mining						
Burns Brothers New Jersey	2.1	1.6	2.9	1.5	1.9	2.2
Elkhorn Coal Corporation	4.4	3.0	3.4	2.5	1.9	-
Island Creek Coal Company	5.2	5.7	6.2	6.7	7.5	9.7
Lehigh Coal and Navigation Company	2.8	2.8	3.7	3.7	1.7	3.0
Pennsylvania Coal and Coke Corporation	2.2	1.2	2.6	3.2	3.9	3.6
Philadelphia and Reading Coal and Iron	3.0	1.7	1.8	4.0	4.1	5.4
Pittsburgh Coal Company	3.4	2.4	1.3	3.9	4.4	4.5
Pittsburgh Terminal Coal Corporation	2.5	3.5	2.0	1.2	2.9	2.6
Total	2.9	2.1	2.1	2.9	2.7	4.1

The figures for the corporations were taken from the "Base Book Standard Earnings Bulletins" of the Standard Trade and Security Service, while the figures for the industries were computed by dividing the total current assets of the corporations, making up the industries, by their total current liabilities.

APPENDIX "B". CORPORATIONS WITH A CURRENT ASSET RATIO BELOW 2 to 1.

CORPORATIONS	1926	1927	1928	1929	1930	1931
Nashawena Mills	X	X	X	X	X	X
Mallinson (H.R.) Co.					X	X
Inspiration Consolidated Copper						X
Barnsdall Corporation (Class A)		X				
Houston Oil Company of Texas	X	X				
Phillips Petroleum Company					X	X
Skelly Oil Company	X			X		
Caterpillar Tractor Company			X			
Warren Brothers Company	X	X				
Celotex Company	X			X		
Foundation Company						X
Pillsbury Flour Mills					X	
National Dairy Products Company	X	X				
Southern Dairies Inc.	X					
U. S. Dairy Products Corporation	X	X	X	X	X	X
Burns Brothers New Jersey		X		X	X	
Elkhorn Coal Corporation					X	
Lehigh Coal and Navigation Company					X	
Pennsylvania Coal and Coke Corporation		X				
Philadelphia and Reading Coal and Iron		X	X			
Pittsburgh Coal Company			X			
Pittsburgh Terminal Coal Corporation				X		

APPENDIX "C" RATIO OF CASH AND EQUIVALENT PLUS RECEIVABLES TO CURRENT LIABILITIES FOR THE 122 CORPORATIONS STUDIED

CORPORATIONS	1926	1927	1928	1929	1930	1931
Meat Packing						
Armour and Company	1.6	1.6	2.2	2.0	2.6	5.1
Cudahy Packing Company	1.6	1.4	1.0	1.2	1.5	2.8
Swift and Company	2.8	3.0	1.9	1.5	2.7	2.9
Wilson and Company (Class A)	2.7	3.2	3.9	2.6	3.9	4.9
Total	2.1	2.0	1.9	1.7	2.6	3.7
Iron and Steel						
United States Steel Corporation	2.5	2.4	2.8	2.3	2.3	3.0
American Rolling Mill Company	2.1	.8	1.3	.7	3.0	2.6
Bethlehem Steel Corporation	2.8	2.7	3.0	3.2	2.1	2.9
Colorado Fuel and Iron Company	.8	.8	1.1	1.9	2.0	2.2
Byers (A. M.) Company	4.0	7.9	10.1	6.2	2.9	7.4
Vulcan Detinning Company	2.0	1.2	2.4	1.7	2.2	1.6
Gulf States Steel Company	1.4	6.6	3.0	4.3	.6	.9
Inland Steel Company	1.3	4.3	5.1	5.5	4.2	2.8
Ludlum Steel Company	3.6	3.1	2.9	1.0	4.9	7.5
Warren Foundry and Pipe Company	5.7	11.9	11.8	8.6	4.9	4.6
Youngstown Sheet and Tube Company	1.9	3.0	3.2	2.8	2.3	4.1
Total	2.5	2.5	2.8	2.6	2.3	3.0
Automobiles and Trucks						
Chrysler Corporation	2.0	2.8	2.0	2.8	4.2	4.8
General Motors Corporation	1.2	1.6	1.5	1.5	2.7	3.0
Graham-Paige Motors Corporation	.5	1.2	.7	2.1	1.2	.8
Hudson Motor Car Company	1.8	1.6	2.1	2.5	3.5	2.9
Hupp Motor Car Corporation	3.6	3.8	4.8	4.8	6.0	4.0
Mack Trucks Incorporated	5.2	2.4	2.9	3.3	8.9	13.4
Nash Motors Company	3.0	4.9	4.9	5.4	7.0	14.2
Packard Motor Car Company	2.2	2.3	1.9	2.4	3.8	5.3
Peerless Motor Car Corporation	4.3	3.6	1.2	1.9	4.8	11.6

APPENDIX "C" CONT'D.

CORPORATIONS	1926	1927	1928	1929	1930	1931
Automobiles and Trucks, Cont'd.						
Reo Motor Car Company	4.2	2.3	1.9	4.6	6.5	5.2
Studebaker Corporation	2.5	1.4	1.4	1.0	1.1	1.0
White Motor Company	3.5	3.8	5.0	5.2	7.2	10.6
Willys Overland Company	1.4	2.1	1.1	1.6	1.5	7.3
Yellow Truck and Coach Mfg. Company	3.7	3.2	1.8	3.6	3.2	3.3
Total	1.7	2.0	1.8	2.1	3.2	3.4
Textiles						
Cotton and Cotton Goods						
Consolidated Textile Corporation	5.1	2.2	1.4	1.5	2.7	14.9
Nashawena Mills	4.9	.5	.5	.7	.7	.5
Naumkeag Steam Cotton	5.8	3.8	10.6	8.2	2.4	2.2
Pacific Mills	18.0	18.4	21.3	11.1	13.1	10.9
Pepperell Manufacturing Company	∞	4.7	16.0	13.8	9.8	15.9
Standard Textile Prod. Company	.9	-	3.1	.5	1.7	1.4
sub-total	5.1	4.6	4.7	3.5	4.0	4.6
Silk and Silk Goods						
Belding Heminway Company	14.5	17.8	12.7	6.7	31.5	12.3
Blumenthal (Sidney) and Company	1.1	1.2	2.4	5.7	15.7	15.7
Century Ribbon Mills	1.2	1.3	1.3	1.4	1.6	1.7
Mallinson (H. R.) Company	.8	1.0	.8	.7	.4	.4
sub-total	1.6	1.6	1.8	2.2	2.5	2.9
Wool and Woolen Goods						
American Woolen Company	1.9	3.9	3.3	24.3	46.9	94.0
Arlington Mills	.7	.8	1.2	1.2	1.3	1.1
Botany Consolidated Mills Incorporated	.6	.5	1.0	.8	1.2	.2
Cleveland Worsted Mills Company	-	.8	1.2	.7	.8	6.7
sub-total	1.3	1.6	2.1	3.4	8.2	5.9
Total	1.8	2.1	2.6	3.1	5.2	4.7

APPENDIX "C" CONT'D.

CORPORATIONS	1926	1927	1928	1929	1930	1931
Copper Mining						
Anaconda Copper Mining	2.4	1.1	.9	.8	.6	.3
Calumet and Hecla Construction Corp.	6.1	4.6	6.4	5.0	1.7	.5
Cerro de Pasco Copper Corporation	5.6	4.3	5.4	6.2	9.2	8.1
Chile Copper Company	1.4	.9	2.7	in Anaconda Copper		
Greene Cananea Company	7.0	11.7	2.8	in Anaconda Copper		
Howe Sound Company	1.6	4.2	4.3	4.4	5.9	-
Inspiration Consolidated Copper	.3	3.2	3.8	1.0	1.8	.4
Kenecott Copper Corporation	4.0	3.4	2.5	2.3	2.8	4.5
Magna Copper Corporation	2.6	2.6	2.7	3.3	7.1	12.6
Miami Copper Corporation	5.8	6.4	5.3	2.0	2.6	-
Nevada Consolidated Copper	1.3	1.4	2.1	2.5	2.5	1.6
Total	2.3	1.9	1.9	1.5	1.3	.8
Oil and Oil Producing						
Atlantic Refining Company	2.4	2.0	2.2	3.3	4.8	2.6
Barnsdall Corporation (Class A)	2.5	.5	3.8	2.1	.9	.7
Gulf Oil Corporation of Pennsylvania	.6	1.8	3.3	2.1	2.8	3.3
Houston Oil Company of Texas	.8	.05	2.7	2.5	3.9	3.0
Humble Oil and Refining Company	.6	1.6	2.3	2.0	2.8	3.9
Phillips Petroleum Company	1.1	4.1	2.8	1.8	.8	.6
Pure Oil Company	.8	2.9	2.1	2.6	1.1	1.0
Shell Union Oil Corporation	1.8	3.3	1.4	2.6	1.7	2.4
Simms Petroleum Company	3.4	1.1	2.7	2.5	1.9	2.7
Sinclair Consolidated Oil Company	1.0	1.5	4.0	1.5	2.7	-
Skelly Oil Company	.5	1.5	1.0	.8	1.3	2.9
Standard Oil Company of New Jersey	2.1	4.9	3.0	2.8	2.7	5.3
Texas Corporation	1.3	1.3	1.0	3.3	3.2	2.9
Tide Water Association Oil	1.3	1.8	2.3	1.4	2.3	2.3
Union Oil of California	2.9	2.9	2.3	2.4	3.5	4.6
Total	1.7	2.1	2.4	2.5	2.5	3.5

APPENDIX "C" CONT'D.

CORPORATIONS	1926	1927	1928	1929	1930	1931
Chemicals and Fertilizers						
Air Reduction Company Incorporated	8.5	4.8	6.1	6.7	7.9	10.7
American Cyanamid Company	1.2	2.3	2.9	2.0	2.2	3.5
Atlas Powder Company	3.5	7.0	7.2	9.3	10.6	17.9
Columbian Carbon Company	2.6	4.3	5.3	5.0	9.1	6.6
Freeport Texas Company	3.0	2.7	1.8	2.0	1.0	.8
Hercules Powder Company	19.7	9.2	7.5	9.6	17.1	16.0
U. S. Industrial Alcohol Company	3.7	3.5	4.0	3.5	2.8	7.8
Texas Gulf Sulphur Company	12.3	4.9	11.7	6.8	6.2	3.5
Total	4.8	4.5	4.8	4.4	4.2	5.4
Machinery and Machine Equipment						
Allis Chalmers Manufacturing Company	3.4	2.7	2.5	2.0	3.7	4.3
American Machine Foundry Company	2.9	7.0	10.0	7.7	1.2	5.1
Bliss (E.W.) Company	3.8	4.3	2.9	2.2	1.9	1.2
Caterpillar Tractor Company	-	2.8	.9	1.5	9.0	20.8
National Acme Company	4.3	4.3	2.6	3.4	8.3	13.2
National Supply Company of Delaware	3.8	6.1	5.2	4.0	9.8	14.3
Seagrave Corporation	1.5	1.7	2.3	4.8	4.7	3.7
Total	3.5	3.8	2.3	2.3	5.8	6.3
Building Equipment and Supplies						
Alpha Portland Cement Company	5.8	4.3	5.2	6.4	10.4	17.4
International Cement Corporation	1.8	1.0	2.2	2.3	2.5	3.6
Warren Brothers Company	1.5	1.2	2.0	1.9	2.0	2.3
American Seating Corporation	6.7	9.7	12.8	14.3	35.8	21.0
Celotex Company	1.0	1.9	1.9	1.1	1.7	2.0
Johns-Manville Corporation	4.1	3.4	2.3	2.0	2.4	3.5
Devco and Reynolds	6.4	4.6	1.4	4.9	9.4	11.5
Foundation Company	9.6	2.4	2.7	2.4	1.9	1.4
Sherwin-Williams Company	2.9	2.6	3.3	3.5	5.6	4.4
Total	3.2	2.6	2.6	2.6	3.2	4.3

APPENDIX "C" CONT'D.

CORPORATIONS	1926	1927	1928	1929	1930	1931
Food Products						
Baking Products and Flour						
Pillsbury Flour Mills	1.3	1.1	1.3	.8	.8	4.0
Purity Bakeries Corporation	3.3	-	5.0	2.0	2.0	3.0
sub-total	1.7	1.1	2.4	1.1	1.0	3.7
Candy, Soft Drinks & Chewing Gum						
Coca-Cola Company	9.2	20.8	6.7	2.9	4.0	2.8
Hires (Chas. E.) Company	3.8	2.9	2.9	2.7	2.2	4.4
Sweets Company of America Incorporated	8.3	6.3	6.2	6.3	5.1	2.6
Wrigley (Wm. Jr.) Company	8.6	3.8	4.0	6.0	6.7	7.4
sub-total	8.4	5.4	4.8	4.7	5.5	5.3
Dairy						
Borden and Company	2.5	2.5	2.5	1.3	1.7	2.8
National Dairy Products Corporation	1.1	1.0	1.9	2.0	2.1	2.5
Southern Dairies Incorporated	.4	1.9	3.0	3.4	2.1	2.0
U. S. Dairy Products Corporation	.6	1.3	1.1	1.2	1.2	1.2
sub-total	1.5	1.7	2.1	1.6	1.9	2.5
Miscellaneous						
Beechnut Packing Company	.8	3.4	4.2	3.8	5.9	6.3
General Foods Corporation	-	1.4	2.2	1.6	2.6	3.7
National Distillers Pro. Corporation	-	5.9	6.3	1.6	1.3	.9
Quaker Oats Company	3.1	2.8	3.1	2.0	3.5	5.2
Wesson Oil and Snowdrift Company	5.7	1.0	2.4	7.1	7.9	10.9
sub-total	3.2	1.8	2.7	2.4	3.6	4.9
Total	2.4	2.1	2.7	2.0	2.5	3.5
Office and Business Equipment and Supplies						
Art Metal Construction Company	3.4	4.6	5.2	4.1	4.1	4.4
Burroughs Adding Machine Company	4.3	7.4	8.1	7.1	9.3	13.2
General Fireproofing Company	2.0	3.8	2.9	2.6	2.6	2.5
International Business Machine Company	3.7	4.0	3.4	2.5	2.6	2.9

APPENDIX "C" CONT'D.

CORPORATIONS	1926	1927	1928	1929	1930	1931
Office and Business Equipment and Supplies						
National Cash Register Company	4.1	4.6	3.6	2.8	4.3	6.3
Remington-Rand Incorporated	3.6	3.6	4.7	4.6	7.1	-
Total	3.8	4.6	4.6	3.9	5.2	6.1
Coal Mining						
Burns Brothers New Jersey	1.0	1.0	1.7	1.1	.9	1.6
Elkhorn Coal Corporation	3.7	2.3	2.9	2.1	1.5	-
Island Creek Coal Company	4.6	5.4	5.8	6.5	7.2	8.8
Lehigh Coal and Navigation Company	2.2	1.5	2.6	2.3	1.7	2.0
Pennsylvania Coal and Coke Corporation	2.0	.9	2.3	2.9	3.7	3.3
Philadelphia and Reading Coal and Iron	1.7	.7	1.0	2.6	2.5	3.1
Pittsburgh Coal Company	2.1	1.2	.6	2.4	2.8	2.7
Pittsburgh Terminal Coal Corporation	2.3	3.0	1.5	1.0	2.4	2.0
Total	2.0	1.2	1.3	2.0	1.9	2.7

The above ratios were computed from figures which were taken from the "Base Book Standard Earnings Bulletins" of the Standard Trade and Securities Service.

APPENDIX "D"

CORPORATIONS WITH AN "ACID TEST" RATIO OF LESS THAN 1 to 1.

CORPORATIONS	YEARS BELOW 1 to 1 RATIO
United States Steel Corporation	1927 and 1929
Colorado Fuel and Iron Company	1926 and 1927
Gulf States Steel Company	1930 and 1931
Graham-Paige Motors Corporation	1926, 1928 and 1931
Nashawena Mills	1927 to 1931 inclusive
Standard Textile Prod. Company	1926 and 1929
Mallinson (H.R.) and Company	1926, 1928, 1929 and 1931
Arlington Mills	1926 and 1927
Botany Consolidated Mills Inc.	1926, 1927, 1929 and 1931
Cleveland Worsted Mills Company	1927, 1929 and 1930
Anaconda Copper Mining	1928 to 1931 inclusive
Calumet and Hecla Cons. Company	1931
Chile Copper Company	1927
Inspiration Cons. Copper	1926 and 1931
Barnsdall Corporation (Class A)	1927, 1930 and 1931
Gulf Oil Corporation of Pennsylvania	1926
Houston Oil Company of Texas	1926 and 1927
Humble Oil and Refining Company	1926
Phillips Petroleum Company	1930 and 1931
Pure Oil Company	1926
Skelly Oil Company	1926 and 1929
Freeport Texas Company	1931
Caterpillar Tractor Company	1928
Pillsbury Flour Mills	1929 and 1930
Southern Dairies Inc.	1926
U. S. Dairies Corporation	1926
Beechnut Packing Company	1926
National Distillers Products Corporation	1931
Burns Brothers New Jersey	1930
Pennsylvania Coal and Coke Corporation	1927

APPENDIX "D" CONT'D.

CORPORATIONS	YEARS BELOW 1 TO 1 RATIO
Philadelphia and Reading Coal and Iron	1927
Pittsburgh Coal Company	1928

APPENDIX "E"

RATIO OF NET WORKING CAPITAL TO INVENTORY FOR THE 122
CORPORATIONS STUDIED.

CORPORATIONS	1926	1927	1928	1929	1930	1931
Meat Packing						
Armour and Company	1.3	1.3	1.3	1.3	1.3	1.8
Cudahy Packing Company	1.4	1.2	1.0	1.2	1.3	1.6
Swift and Company	1.5	1.5	1.3	1.2	1.5	1.7
Wilson and Company (Class A)	1.5	1.5	1.6	1.4	1.6	1.9
Total	1.4	1.4	1.3	1.3	1.4	1.7
Iron and Steel						
United States Steel Corporation	1.7	1.6	1.8	1.6	1.4	1.4
American Rolling Mill Company	1.3	.9	1.1	.8	1.5	1.4
Bethlehem Steel Corporation	1.8	1.7	2.1	2.6	1.6	1.7
Colorado Fuel and Iron Company	.9	.9	1.0	1.5	1.5	1.5
Byers (A. M.) Company	1.9	3.1	4.2	4.6	2.3	1.7
Vulcan Detinning Company	1.6	1.1	2.0	1.7	2.8	1.5
Gulf States Steel Company	1.2	2.4	1.6	2.0	.7	.9
Inland Steel Company	1.9	2.0	2.6	2.6	1.9	1.8
Ludlum Steel Company	1.4	1.4	1.5	1.0	1.3	1.5
Warren Foundry and Pipe Company	2.2	2.3	2.5	2.8	2.0	1.7
Youngstown Sheet and Tube Company	1.3	1.4	1.6	1.5	1.3	1.4
Total	1.6	1.6	1.8	1.7	1.5	1.5
Automobiles and Trucks						
Chrysler Corporation	1.7	2.4	1.7	1.9	2.4	2.9
General Motors Corporation	1.2	1.6	1.5	1.3	2.1	2.7
Graham-Paige Motors Corporation	.7	1.2	.8	1.5	1.1	.8
Hudson Motor Car Company	1.6	1.4	2.0	1.9	2.9	2.5
Hupp Motor Car Corporation	2.3	2.5	3.6	2.1	2.5	2.4
Mack Trucks Incorporated	2.1	1.9	1.9	1.8	2.2	2.9
Nash Motors Company	5.0	9.9	7.6	8.4	13.6	27.4
Packard Motor Car Company	2.9	2.3	2.1	2.2	2.5	2.7
Peerless Motor Car Corporation	1.5	1.6	1.1	1.4	2.6	5.4

APPENDIX "E" CONT'D.

CORPORATIONS	1926	1927	1928	1929	1930	1931
Automobiles and Trucks Cont'd.						
Reo Motor Car Company	1.7	1.4	1.3	2.0	2.4	2.1
Studebaker Corporation	1.7	1.2	1.2	.9	1.1	1.0
White Motor Company	1.5	1.6	2.1	1.9	1.9	2.4
Willys Overland Company	1.1	1.4	1.1	1.2	1.1	.9
Yellow Trucks and Coach Mfg. Company	1.6	1.6	1.3	1.7	1.5	1.5
Total	1.5	1.7	1.6	1.6	2.1	2.5
Textiles						
Cotton and Cotton Goods						
Consolidated Textile Corporation	1.7	1.3	1.2	1.2	1.9	2.6
Nashawena Mills	.5	.6	.6	.7	.7	.6
Naumkeag Steam Cotton	1.9	1.6	1.8	1.6	1.4	1.2
Pacific Mills	1.9	1.7	2.1	2.3	1.9	1.8
Pepperell Manufacturing Company	1.9	1.4	1.4	1.4	1.4	1.5
Standard Textile Prod. Company	.9	-	1.3	.8	1.2	1.2
sub-total	1.7	1.5	1.6	1.6	1.5	1.5
Silk and Silk Goods						
Belding Heminway Company	1.5	1.4	1.4	1.3	1.9	2.3
Blumenthal (Sidney) and Company	1.1	1.1	1.5	2.2	2.5	1.6
Century Ribbon Mills	1.1	1.2	1.2	1.3	1.7	1.6
Mallinson (H. R.) and Company	.9	1.0	.9	.8	.5	.6
sub-total	1.2	1.2	1.3	1.4	1.7	1.6
Wool and Woolen Goods						
American Woolen Company	1.3	1.4	1.3	2.0	2.7	2.0
Arlington Mills	.8	.8	1.1	1.1	1.1	1.1
Botany Consolidated Mills Inc.	.7	.7	1.0	.9	1.0	.8
Cleveland Worsted Mills Company	-	.9	1.1	.8	.8	1.6
sub-total	1.1	1.2	1.2	1.6	2.1	1.7
Total	1.3	1.3	1.3	1.6	1.8	1.6

APPENDIX "E" CONT'D.

CORPORATIONS	1926	1927	1928	1929	1930	1931
Copper Mining						
Anaconda Copper Mining	1.4	1.1	.9	.8	.7	.5
Calumet and Hecla Cons. Company	2.0	1.7	2.6	2.1	1.1	.9
Cerro de Pasco Copper Corporation	2.6	2.1	2.3	2.5	2.4	1.8
Chile Copper Company	1.2	.9	2.5	in Anaconda Copper		
Greene Cananea Company	2.0	2.3	2.4	in Anaconda Copper		
Howe Sound Company	2.5	5.5	6.6	8.3	10.9	-
Inspiration Consolidated Copper	.7	1.8	5.2	1.0	1.4	.6
Kenecott Copper Corporation	1.2	1.6	2.1	1.8	1.8	1.8
Magna Copper Corporation	1.7	1.8	1.7	2.2	3.1	3.6
Miami Copper Corporation	2.7	2.9	2.3	1.3	1.6	-
Nevada Consolidated Copper	1.1	1.2	1.4	1.4	1.5	1.3
Total	1.4	1.3	1.6	1.3	1.2	.9
Oil and Oil Producing						
Atlantic Refining Company	1.3	1.3	1.3	1.5	1.6	1.4
Barnsdall Corporation (Class A)	2.0	.4	2.0	1.5	1.0	.8
Gulf Oil Corporation of Pennsylvania	.8	1.2	1.5	1.3	1.5	1.6
Houston Oil Company of Texas	.6	1.9	2.7	3.0	3.6	3.1
Humble Oil and Refining Company	.8	1.2	1.5	1.5	1.7	2.1
Phillips Petroleum Company	1.1	2.3	2.0	1.4	.8	.4
Pure Oil Company	.8	1.5	1.4	1.6	1.1	1.0
Shell Union Oil Corporation	1.5	2.4	1.2	1.9	1.3	1.9
Simms Petroleum Company	2.5	1.0	1.3	1.3	1.2	1.6
Sinclair Consolidated Oil Company	1.0	1.3	2.7	1.3	2.1	-
Skelly Oil Company	.3	1.2	1.0	.7	1.2	2.0
Standard Oil Company of New Jersey	2.0	1.5	2.1	1.9	2.0	2.5
Texas Corporation	1.1	1.1	1.0	1.6	1.5	1.5
Tide Water Association Oil	1.1	1.3	1.6	1.2	1.4	1.4
Union Oil of California	1.6	1.6	1.5	1.3	1.5	1.6
Total	1.4	1.4	1.7	1.6	1.7	1.9

APPENDIX "E" CONT'D.

CORPORATIONS	1926	1927	1928	1929	1930	1931
Chemicals and Fertilizers						
Air Reduction Company Incorporated	5.2	5.7	7.3	7.7	8.7	10.5
American Cyanamid Company	1.1	1.5	2.6	1.7	1.5	1.7
Atlas Powder Company	1.9	2.5	3.4	3.3	3.5	4.9
Columbian Carbon Company	1.5	2.0	3.8	3.6	3.6	2.6
Freeport Texas Company	1.6	2.1	1.6	1.8	1.0	.9
Hercules Powder Company	2.7	2.3	2.2	2.4	2.9	2.9
U. S. Industrial Alcohol Company	3.0	1.8	2.7	2.2	1.8	2.1
Texas Gulf Sulphur Company	1.9	1.5	1.8	1.9	1.5	1.3
Total	2.1	2.1	2.6	2.5	2.2	2.2
Machinery and Machine Equipment						
Allis Chalmers Manufacturing Company	2.0	1.7	1.6	1.5	2.0	2.0
American Machine Foundry Company	1.3	2.1	3.3	3.3	4.2	5.4
Bliss (E. W.) Company	1.6	1.6	1.5	1.3	1.2	1.1
Caterpillar Tractor Company	-	1.5	.9	1.3	2.0	2.8
National Acme Company	1.3	1.3	1.4	1.5	1.7	1.7
National Supply Company of Delaware	1.9	2.1	2.1	1.8	1.7	1.6
Seagrave Corporation	1.3	1.5	1.7	1.9	2.0	1.9
Total	1.8	1.8	1.6	1.6	1.9	2.0
Building Equipment and Supplies						
Alpha Portland Cement Company	2.6	2.6	3.0	3.2	4.1	4.7
International Cement Corporation	1.3	1.0	1.5	1.5	1.7	1.8
Warren Brothers Company	4.6	2.6	6.6	9.8	18.8	7.7
American Seating Corporation	3.3	4.1	3.9	4.0	6.5	4.7
Celotex Company	1.0	3.4	2.2	1.2	1.7	1.5
Johns-Manville Corporation	2.7	2.3	1.9	1.8	2.1	2.3
Devco and Reynolds	2.2	1.9	1.3	1.8	2.2	2.4
Foundation Company	8.8	3.8	4.2	5.4	4.9	3.4
Sherwin-Williams Company	1.5	1.5	1.7	1.8	2.0	1.9
Total	2.1	1.9	2.0	2.1	2.6	2.3

APPENDIX "E" CONT'D.

CORPORATIONS	1926	1927	1928	1929	1930	1931
Food Products						
Baking Products and Flour						
Pillsbury Flour Mills	1.1	1.1	1.1	.9	.8	1.9
Purity Bakeries Corporation	2.6	-	3.9	1.9	1.7	2.7
sub-total	1.4	1.1	1.7	1.0	1.0	2.1
Candy, Soft Drinks & Chewing Gum						
Coca-Cola Company	4.3	6.1	4.9	1.6	2.2	1.7
Hires (Chas. E.) Company	3.0	2.6	2.3	2.3	1.5	2.6
Sweets Company of America Incorporated	3.2	2.9	4.1	4.2	7.8	2.9
Wrigley (Wm. Jr.) Company	3.0	2.2	2.3	2.5	2.7	2.9
sub-total	3.3	2.9	2.9	2.2	2.5	2.5
Dairy						
Borden and Company	3.1	2.8	2.7	1.3	1.7	2.5
National Dairy Products Corporation	1.2	1.1	2.3	2.5	2.0	2.6
Southern Dairies Incorporated	d1.3	2.2	2.8	3.4	2.0	1.9
U. S. Dairy Products Corporation	d1.8	2.0	1.2	2.0	2.0	2.4
sub-total	2.0	2.0	2.5	1.8	1.8	2.6
Miscellaneous						
Beechnut Packing Company	1.0	1.3	1.4	1.3	1.4	1.7
General Foods Corporation	-	1.2	1.6	1.3	1.6	1.9
National Distillers Pro. Corporation	-	2.8	2.8	1.1	1.0	1.1
Quaker Oats Company	1.9	1.8	1.8	1.5	2.2	3.9
Wesson Oil and Snowdrift Company	2.7	1.0	1.5	2.2	3.0	3.6
sub-total	1.8	1.4	1.6	1.5	1.8	2.2
Total	2.2	1.7	2.0	1.6	1.9	2.4
Office and Business Equipment and Supplies						
Art Metal Construction Company	2.0	2.0	2.4	2.4	2.2	2.1
Burroughs Adding Machine Company	2.1	2.9	3.3	2.8	3.0	3.1
General Fireproofing Company	1.7	1.8	1.7	1.8	1.8	1.7
International Business Machine Company	2.7	3.1	3.0	2.2	2.5	2.9

APPENDIX "E" CONT'D.

CORPORATIONS	1926	1927	1928	1929	1930	1931
Office and Business Equipment and Supplies Cont'd.						
National Cash Register Company	3.4	3.7	3.4	2.4	2.9	2.9
Remington-Rand Incorporated	2.0	1.8	2.0	2.2	2.2	-
Total	2.4	2.5	2.7	2.4	2.6	2.9
Coal Mining						
Burns Brothers New Jersey	1.2	1.0	1.6	1.1	.3	1.9
Elkhorn Coal Corporation	4.8	3.1	4.7	4.0	2.0	-
Island Creek Coal Company	12.8	12.4	14.3	21.1	19.9	9.7
Lehigh Coal and Navigation Company	3.2	1.4	2.4	2.1	42.3	2.0
Pennsylvania Coal and Coke Corporation	7.5	.7	5.0	13.3	14.0	8.9
Philadelphia and Reading Coal and Iron	1.5	.7	1.0	2.2	1.9	2.1
Pittsburgh Coal Company	1.9	1.1	.4	2.0	2.2	2.0
Pittsburgh Terminal Coal Corporation	7.2	5.3	2.1	1.1	4.1	3.0
Total	2.0	1.2	1.4	2.2	2.3	2.2

The above ratios were computed from figures which were taken from the "Base Book Standard Earnings Bulletins" of the Standard Trade and Securities Service.

APPENDIX "F"

RATIO OF NET PROFIT TO FIXED CHARGES FOR THE 122 CORPORATIONS STUDIED.

CORPORATIONS	1927	1928	1929	1930	1931
Meat Packing					
Armour and Company	.7	1.4	1.3	1.0	d.8
Cudahy Packing Company	2.3	2.2	2.0	2.5	2.4
Swift and Company	4.4	5.9	5.8	5.7	1.2
Wilson and Company (Class A)	1.2	2.3	2.3	2.6	d.4
Total	1.4	2.1	2.0	1.9	d.2
Iron and Steel					
United States Steel Corporation	6.2	7.7	25.0	7.6	3.4
American Molling Mill Company	9.5	3.6	4.9	1.1	d.3
Bethlehem Steel Corporation	2.4	2.7	4.8	4.3	1.0
Colorado Fuel and Iron Company	2.5	1.6	2.4	1.2	d1.1
Byers (A. M.) Company	-	-	-	-	-
Vulcan Detinning Company	-	-	-	-	-
Gulf States Steel Company	7.0	5.0	6.7	d1.5	d2.1
Inland Steel Company	11.1	8.6	9.8	6.0	1.7
Ludlum Steel Company	3.6	7.9	-	-	-
Warren Foundry and Pipe Company	3.7	1.1	4.0	-	-
Youngstown Sheet and Tube Company	2.7	3.7	6.9	2.9	d.6
Total	4.5	5.5	11.3	7.5	1.0
Automobiles and Trucks					
Chrysler Corporation	103.5	20.1	7.2	1.1	1.7
General Motors Corporation	-	-	-	-	-
Graham-Paige Motors Corporation	-	-	-	-	-
Hudson Motor Car Company	-	-	-	-	-
Hupp Motor Car Corporation	-	-	-	-	-
Mack Trucks Incorporated	38.5	42.1	52.8	17.7	-
Nash Motors Company	-	-	-	-	-
Packard Motor Car Company	-	-	-	-	-
Peerless Motor Car Corporation	-	-	-	-	-

APPENDIX "F" CONT'D.

CORPORATIONS	1927	1928	1929	1930	1931
Automobiles and Trucks Cont'd.					
Reo Motor Car Company	-	-	-	-	-
Studebaker Corporation	-	-	-	-	-
White Motor Company	-	-	-	-	-
Willys Overland Company	14.3	12.1	d7.5	d29.3	d77.3
Yellow Truck and Coach Manufacturing Company	-	-	-	-	-
Total	39.1	18.8	6.6	d5.4	d2.6
Textiles					
Cotton and Cotton Goods					
Consolidated Textile Corporation	1.2	.5	.03	d1.5	d.8
Nashawena Mills	-	-	-	-	-
Naumkeag Steam Cotton	-	-	-	-	-
Pacific Mills	2.2	.1	3.3	-	-
Pepperell Manufacturing Company	-	-	-	-	-
Standard Textile Production Company	-	2.9	2.4	d1.6	d1.2
sub-total	1.7	.8	1.4	d.7	d.9
Silk and Silk Goods					
Belding Heminway	2.8	d.9	.2	d8.9	d11.1
Blumenthal (Sidney) and Company	5.2	9.0	17.2	-	-
Century Ribbon Mills	-	-	-	-	-
Mallinson (H.R.) and Company	-	-	-	-	-
sub-total	3.9	4.9	7.9	d8.9	d11.1
Wool and Woolen Goods					
American Woolen Company	-	-	-	-	-
Arlington Mills	-	-	-	-	-
Botany Consolidated Mills Incorporated	.2	d.5	d2.3	d3.4	d4.8
Cleveland Worsted Mills Company	-	-	-	-	-
sub-total	.2	d.5	d2.3	d3.4	d4.8
Total	1.6	1.1	2.0	d2.3	d2.7

APPENDIX "F" CONT'D.

CORPORATIONS	1927	1928	1929	1930	1931
Copper Mining					
Anaconda Copper Mining	1.8	3.3	9.5	5.5	.3
Calumet Hecla Construction Corporation	-	-	-	-	-
Cerro de Pasco Copper Corporation	-	-	-	-	-
Chile Copper Company	5.7	10.2	-	-	-
Greene Cananea Company	-	-	-	-	-
Howe Sound Company	-	-	-	-	-
Inspiration Consolidated Copper	2.5	11.5	17.5	1.7	-
Kenecott Copper Corporation	-	-	-	-	-
Magna Copper Corporation	-	-	-	-	-
Miami Copper Corporation	-	-	-	-	-
Nevada Consolidated Copper	15.8	93.4	-	-	-
Total	2.7	5.8	9.6	8.4	.3
Oil and Oil Producing					
Atlantic Refining Company	3.4	21.9	23.7	4.6	1.6
Barnsdall Corporation (Class A)	3.4	3.4	-	-	-
Gulf Oil Corporation of Pennsylvania	4.6	11.2	13.0	3.0	d2.3
Houston Oil Company of Texas	4.3	4.1	4.4	3.4	.5
Humble Oil Refining Company	3.7	8.1	13.6	7.9	2.1
Phillips Petroleum Company	4.2	4.0	7.5	2.4	d.8
Pure Oil Company	4.5	9.6	5.9	2.2	1.3
Shell Union Oil Corporation	6.8	6.0	4.7	.2	d3.2
Simms Petroleum Company	.7	2.6	-	-	-
Sinclair Consolidated Oil Company	1.7	2.9	3.6	4.2	-
Skelly Oil Company	2.6	4.8	7.3	3.0	d1.5
Standard Oil Company of New Jersey	6.8	15.8	17.0	7.4	3.2
Texas Corporation	35.5	24.6	18.1	3.2	d.5
Tide Water Association Oil	6.6	14.5	14.3	10.5	-
Union Oil Company of California	9.5	10.2	14.4	6.9	2.8
Total	4.8	9.4	10.5	3.8	.3

APPENDIX "F" CONT'D.

CORPORATIONS	1927	1928	1929	1930	1931
Chemicals and Fertilizers					
Air Reduction Company	-	-	-	-	-
American Cyanamid Company	-	6.2	8.0	11.7	2.7
Atlas Powder Company	-	-	-	-	-
Columbian Carbon Company	-	-	-	-	-
Freeport Texas Company	-	-	-	-	-
Hercules Powder Company	-	-	-	-	-
U. S. Industrial Alcohol Company	-	-	-	-	-
Texas Gulf Sulphur Company	-	-	-	-	-
Total	-	6.2	8.0	11.7	2.7
Machinery and Machine Equipment					
Allis Chalmers Manufacturing Company	7.4	4.6	6.3	5.4	2.5
American Machine Foundry Company	15.9	15.8	21.8	30.8	-
Bliss (E. W.) Company	-	-	-	-	-
Caterpillar Tractor Company	-	-	-	14.8	3.2
National Acme Company	2.0	8.5	14.6	1.1	d7.3
National Supply Company of Delaware	-	-	-	-	-
Seagrave Corporation	-	-	-	-	-
Total	7.2	6.2	9.2	10.1	2.0
Building Equipment and Supplies					
Alpha Portland Cement Company	-	-	-	-	-
International Cement Corporation	-	-	-	-	2.4
Warren Brothers Company	5.5	8.1	11.3	13.3	2.8
American Seating Corporation	4.8	3.6	3.0	1.8	d2.6
Celotex Company	3.8	5.3	6.4	2.0	d.4
Johns-Manville Corporation	-	-	-	-	-
Devos and Reynolds	-	-	-	-	-
Foundation Company	-	-	-	-	-
Sherwin-Williams Company	-	-	-	-	-
Total	4.8	5.8	7.1	5.6	1.8

APPENDIX "P" CONT'D.

CORPORATIONS	1927	1928	1929	1930	1931
Food Products					
Baking Products and Flour					
Pillsbury Flour Mills	3.6	3.9	4.0	2.6	3.7
Purity Bakeries Corporation	-	11.4	11.5	11.3	5.7
sub-total	3.6	6.6	6.6	4.5	4.2
Candy, Soft Drinks and Chewing Gum					
Coca-Cola Company	-	-	-	-	-
Hires (Chas. E.) Company	-	-	-	-	-
Sweets Company of America Incorporated	-	-	-	-	-
Wrigley (Wm. Jr.) Company	-	-	-	-	-
sub-total	-	-	-	-	-
Dairy					
Borden and Company	-	-	-	-	-
National Dairy Products Corporation	6.5	7.0	10.4	7.0	6.0
Southern Dairies Incorporated	1.3	1.7	3.9	2.8	.6
U. S. Dairy Products Corporation	3.8	4.4	5.8	5.0	5.3
sub-total	5.4	6.1	9.2	6.7	5.8
Miscellaneous					
Beechnut Packing Company	-	-	-	-	-
General Foods Corporation	-	-	-	-	-
National Distillers Products Corporation	1.2	3.5	-	-	-
Quaker Oats Company	-	-	-	-	-
Wesson Oil and Snowdrift Company	-	-	-	-	-
sub-total	1.2	3.5	-	-	-
Total	4.6	6.1	6.1	6.1	5.5
Office and Business Equipment and Supplies					
Art Metal Construction Company	-	-	-	-	-
Burroughs Adding Machine Company	-	-	-	-	-
General Fireproofing Company	-	-	-	-	-
International Business Machine Company	14.6	17.9	31.1	41.3	45.9

APPENDIX "F" CONT'D.

CORPORATIONS	1927	1928	1929	1930	1931
Office and Business Equipment and Supplies, Cont'd.					
National Cash Register Company	-	-	-	-	-
Remington-Rand Incorporated	3.1	3.1	5.7	2.2	-
Total	5.2	5.7	9.4	7.3	45.9
Coal Mining					
Burns Brothers New Jersey	-	-	-	-	-
Elkhorn Coal Corporation	.7	1.0	1.1	.8	-
Island Creek Coal Company	-	-	-	-	-
Lehigh Coal and Navigation Company	4.6	4.2	4.6	3.4	2.3
Pennsylvania Coal and Coke Corporation	d11.0	d5.7	2.8	.4	d13.9
Philadelphia and Reading Coal and Iron	d2.2	1.0	.6	1.4	1.5
Pittsburgh Coal Company	d1.9	.3	1.1	.4	d.5
Pittsburgh Terminal Coal Corporation	d4.4	d5.5	d4.1	d3.8	d4.7
Total	d.7	1.2	1.3	1.3	1.0

The above ratios for the individual corporations were taken from the "Base Books Standard Earnings Bulletins" of the Standard Trade and Security Service. The ratios for the industries were computed by dividing the net profit of the corporations having fixed charges by the fixed charges of these same corporations. Both net profit and the fixed charges, which were used in making the computations, were taken from the same bulletins.

APPENDIX "G"

RATIO OF NET PROFIT TO INVESTED CAPITAL FOR THE 122
CORPORATIONS STUDIED.

CORPORATIONS	1927	1928	1929	1930	1931
Meat Packing					
Armour and Company	2.8	5.3	5.0	3.6	d2.8
Cudahy Packing Company	6.9	7.6	7.8	7.7	5.5
Swift and Company	5.4	6.2	5.6	5.4	1.4
Wilson and Company (Class A)	2.3	4.4	4.6	4.8	d.7
Total	3.9	5.7	5.4	4.6	d.4
Iron and Steel					
United States Steel Corporation	4.5	5.7	9.6	4.9	.8
American Rolling Mill Company	6.6	5.9	8.2	1.8	d.7
Bethlehem Steel Corporation	4.5	5.0	7.2	4.6	1.1
Colorado Fuel and Iron	5.9	3.7	5.3	2.6	d3.3
Byers (A. M.) Company	8.3	9.0	7.8	4.6	.4
Vulcan Detinning Company	3.8	6.5	9.2	5.2	4.2
Gulf States Steel Company	3.7	4.7	5.4	d1.7	d2.4
Inland Steel Company	9.1	11.9	13.7	8.1	3.0
Ludlum Steel Company	6.8	13.7	9.3	4.1	d1.0
Warren Foundry and Pipe Company	3.2	1.1	3.0	4.7	7.1
Youngstown Sheet and Tube Company	5.5	6.9	11.6	5.0	d1.2
Total	4.8	5.7	9.1	4.7	.7
Automobiles and Trucks					
Chrysler Corporation	21.7	16.8	13.3	1.9	3.1
General Motors Corporation	31.0	32.3	26.0	15.6	10.0
Graham-Paige Motors Corporation	d35.4	5.4	d4.9	d24.6	d33.3
Hudson Motor Car Company	28.3	24.0	19.3	.6	d4.6
Hupp Motor Car Corporation	12.8	30.0	9.9	3.0	17.7
Mack Trucks Incorporated	10.3	19.1	11.3	3.6	-
Nash Motors Company	45.3	37.4	32.6	15.6	10.6
Packard Motor Car Company	22.8	36.2	36.5	13.8	d5.2
Peerless Motor Car Corporation	d8.0	d21.8	d41.9	1.1	d1.4

APPENDIX "G" CONT'D.

CORPORATIONS	1927	1928	1929	1930	1931
Automobiles and Trucks, Cont'd.					
Reo Motor Car Company	16.0	16.0	4.6	d7.3	d12.5
Studebaker Corporation	9.9	11.4	10.1	1.4	.9
White Motor Company	d3.0	4.1	5.1	d1.0	d7.8
Willys Overland Company	10.4	8.6	d6.9	d14.0	d36.6
Yellow Trucks and Coach Manufacturing Company	d18.3	d2.9	3.1	2.9	d7.6
Total	2.2	2.5	2.0	1.0	.4
Textiles					
Cotton and Cotton Goods					
Consolidated Textile Corporation	5.9	2.7	.2	d11.8	d5.6
Nashawena Mills	4.8	d1.8	2.1	d3.4	d3.7
Naumkeag Steam Cotton	14.5	3.6	5.2	d5.5	d.5
Pacific Mills	3.9	.2	2.8	d5.3	d9.7
Pepperell Manufacturing Company	5.2	5.4	5.8	3.4	d3.1
Standard Textile Prod. Company	-	6.8	5.6	d4.5	d3.1
sub-total	5.5	2.3	3.5	d3.1	d5.8
Silk and Silk Goods					
Belding Heminway Company	6.2	d1.8	.3	d18.8	d16.5
Blumenthal (Sidney) and Company	13.5	24.8	19.8	d1.4	.1
Century Ribbon Mills	1.4	1.2	d.6	d3.9	3.7
Mallinson (H.R.) and Company	8.9	16.0	d13.2	d40.5	d18.9
sub-total	8.1	10.9	5.8	d12.3	d9.0
Wool and Woolen Goods					
American Woolen Company	1.2	d.4	d.4	d3.8	d3.4
Arlington Mills	d.3	d1.0	d4.5	d11.1	d5.8
Botany Consolidated Mills Incorporated	.6	d1.7	d7.4	d10.7	d14.4
Cleveland Worsted Mills Company	d.1	d6.5	d3.8	d35.4	d5.5
sub-total	.8	d.5	d3.9	d6.9	d5.7
Total	3.2	1.7	d1.0	d5.9	d5.9

APPENDIX "G" CONT'D.

CORPORATIONS	1927	1928	1929	1930	1931
Copper Mining					
Anaconda Copper Mining	5.2	8.6	11.7	3.9	.2
Calumet and Hecla Construction Corporation	4.2	9.6	13.6	2.2	d3.1
Cerro de Pasco Copper Corporation	6.2	9.6	8.1	d4.0	d6.5
Chile Copper Company	8.7	13.6	in Anaconda Copper		
Greene Cananea Company	1.0	3.5	in Anaconda Copper		
Howe Sound Company	12.8	15.2	19.9	11.2	-
Inspiration Consolidated Copper	3.3	9.8	13.1	1.9	d.6
Kenecott Copper Corporation	10.5	16.4	16.9	5.4	1.4
Magna Copper Corporation	11.3	25.0	34.9	12.4	2.6
Miami Copper Corporation	3.0	6.6	13.5	2.8	-
Nevada Consolidated Copper	7.5	17.9	19.7	2.4	2.8
Total	6.0	11.8	14.6	3.9	d.1
Oil and Oil Producing					
Atlantic Refining Company	2.5	12.3	11.4	2.2	.9
Barnsdall Corporation (Class A)	8.6	7.9	11.8	8.3	d5.4
Gulf Oil Corporation of Pennsylvania	5.4	11.1	12.0	3.4	d3.8
Houston Oil Company of Texas	6.4	4.6	4.3	4.1	.7
Humble Oil and Refining Company	4.9	11.4	16.2	9.2	2.3
Phillips Petroleum Company	4.7	6.5	11.4	2.7	d1.3
Pure Oil Company	3.3	6.6	3.8	2.5	1.4
Shell Union Oil Corporation	4.1	7.4	4.9	.3	d5.1
Simms Petroleum Company	1.0	3.2	12.9	d10.0	d22.7
Sinclair Consolidated Oil Company	3.7	5.5	6.1	6.8	-
Skelly Oil Company	4.5	9.9	12.1	4.5	d2.7
Standard Oil Company of New Jersey	4.1	9.1	9.1	3.6	1.2
Texas Corporation	7.0	11.8	9.0	4.0	d.6
Tide Water Association Oil	3.8	8.4	6.8	4.3	d2.3
Union Oil of California	6.2	6.7	8.0	5.2	2.4
Total	4.6	8.9	8.8	3.9	d5.3

APPENDIX "G" CONT'D.

CORPORATIONS	1927	1928	1929	1930	1931
Chemicals and Fertilizers					
Air Reduction Company Incorporated	12.1	14.1	20.3	15.5	11.2
American Cyanamid Company	8.9	8.8	6.2	6.3	2.1
Atlas Powder Company	8.4	8.5	9.6	4.6	3.2
Columbian Carbon Company	11.8	14.4	16.1	9.2	6.0
Freeport Texas Company	26.6	26.1	30.0	30.5	22.7
Hercules Powder Company	8.5	10.4	11.0	6.0	3.7
U.S. Industrial Alcohol Company	4.7	12.0	12.5	3.3	d6.0
Texas Gulf Sulphur Company	70.0	67.2	58.6	44.3	27.7
Total	15.1	18.5	18.5	12.2	7.5
Machinery and Machine Equipment					
Allis Chalmers Manufacturing Company	6.4	6.4	8.0	6.3	3.0
American Machine Company	7.8	7.1	12.2	14.8	8.8
Bliss (E. W.) Company	11.9	4.7	8.4	.4	1.4
Caterpillar Tractor Company	26.8	28.9	27.8	17.8	4.2
National Acme Company	3.6	13.6	20.2	1.5	d11.7
National Supply Company of Delaware	7.6	8.5	9.9	4.7	d4.6
Seagrave Corporation	10.3	12.1	10.7	4.1	d2.5
Total	8.8	10.7	13.7	8.1	.6
Building Equipment and Supplies					
Alpha Portland Cement Company	8.6	8.1	5.8	4.1	d2.7
International Cement Corporation	12.1	11.3	11.0	9.9	4.4
Warren Brothers Company	15.6	15.6	18.5	18.6	6.2
American Seating Corporation	11.2	8.8	7.5	4.4	d6.8
Celotex Company	8.1	12.0	11.0	3.1	.9
Johns-Manville Corporation	12.8	15.5	17.0	8.4	2.3
Devco and Reynolds	9.5	10.0	8.4	1.0	3.2
Foundation Company	6.3	4.1	3.7	.2	d11.7
Sherwin-Williams Company	12.5	12.4	13.0	7.8	d6.9
Total	11.3	11.7	11.8	7.7	2.9

APPENDIX "G" CONT'D.

CORPORATIONS	1927	1928	1929	1930	1931
Food Products					
Baking Products and Flour					
Pillsbury Flour Mills	15.9	13.3	14.1	13.2	9.7
Purity Bakeries Corporation	15.1	15.1	16.8	12.5	6.7
sub-total	15.4	14.4	15.8	12.8	8.1
Candy, Soft Drinks and Chewing Gum					
Coca-Cola Company	26.2	26.9	27.9	26.7	25.3
Hires (Chas. E.) Company	5.1	9.2	13.2	17.7	9.3
Sweets Company of America Incorporated	4.3	8.0	8.6	8.8	8.2
Wrigley (Wm. Jr.) Company	26.8	27.4	24.2	23.5	18.8
sub-total	24.9	25.4	25.2	24.4	21.4
Dairy					
Borden and Company	10.9	10.7	13.9	13.3	11.2
National Dairy Products Corporation	16.3	16.2	15.0	14.5	12.8
Southern Dairies Incorporated	4.0	5.0	8.8	3.1	.9
U. S. Dairy Products Corporation	7.6	9.3	10.8	8.4	9.1
sub-total	12.6	12.9	14.1	13.3	12.0
Miscellaneous					
Beechnut Packing Company	13.7	16.0	15.4	13.1	11.0
General Foods Corporation	36.8	30.4	32.4	30.2	28.8
National Distillers Products Corporation	1.7	4.5	3.0	1.6	3.7
Quaker Oats Company	15.3	15.0	14.9	10.2	12.2
Wesson Oil and Snowdrift Company	9.2	10.6	6.4	8.0	6.5
sub-total	16.8	17.7	17.0	15.2	15.1
Total	16.5	16.4	16.7	15.3	13.9
Office and Business Equipment and Supplies					
Art Metal Construction Company	11.8	11.1	15.8	8.0	18.1
Burroughs Adding Machine Company	20.4	21.8	32.2	20.7	11.6
General Fireproofing Company	13.1	13.6	18.1	12.8	.7
International Business Machine Company	14.1	15.7	18.5	18.6	17.9

APPENDIX "G" CONT'D.

CORPORATIONS	1927	1928	1929	1930	1931
Office and Business Equipment and Supplies, Cont'd.					
National Cash Register Company	15.4	17.2	18.3	8.0	1.8
Remington-Rand Incorporated	6.3	6.5	10.8	4.1	-
Total	12.9	14.0	18.2	12.3	9.2
Coal Mining					
Burns Brothers New Jersey	5.1	5.3	4.5	d4.8	d6.2
Elkhorn Coal Company	1.1	1.8	1.9	1.6	-
Island Creek Coal Company	17.1	13.8	15.3	11.7	7.8
Lehigh Coal and Navigation Company	5.5	4.7	5.1	5.4	4.1
Pennsylvania Coal and Coke Corporation	d6.5	d4.3	1.6	.1	d2.7
Philadelphia and Reading Coal and Iron	d4.5	2.2	1.1	2.9	3.3
Pittsburgh Coal Company	d.8	.8	1.1	.4	d.5
Pittsburgh Terminal Coal Corporation	3.8	d4.0	d3.1	d3.0	d3.9
Total	.4	2.2	2.5	2.1	1.2

The above ratios for the individual corporations were taken from the "Base Book Standard Earnings Bulletins" of the Standard Trade and Securities Service. The ratios for the industries were computed by dividing the net profit of the corporations making up the industries by the invested capital of these same corporations.

APPENDIX "H"

RATIO OF NET PROFIT TO NET PROPERTY FOR
THE 122 CORPORATIONS STUDIED.

CORPORATIONS	1927	1928	1929	1930	1931
Meat Packing					
Armour and Company	4.7	9.3	8.8	6.0	d4.4
Cudahy Packing Company	13.1	13.4	13.7	13.0	9.0
Swift and Company	11.6	13.3	11.4	16.5	2.4
Wilson and Company (Class A)	3.6	7.9	8.1	8.0	d1.1
Total	7.1	10.7	9.9	8.2	d.6
Iron and Steel					
United States Steel Corporation	5.5	7.0	12.2	6.1	1.0
American Rolling Mill Company	8.2	7.5	10.8	2.5	d.9
Bethlehem Steel Corporation	5.6	6.4	11.4	6.0	1.4
Colorado Fuel and Iron	6.6	4.2	6.5	3.1	d4.0
Byers (A. M.) Company	16.1	19.1	17.3	6.1	.5
Vulcan Detinning Company	18.9	36.5	27.4	15.2	12.0
Gulf States Steel Company	5.1	5.9	7.6	1.9	d2.6
Inland Steel Company	13.0	18.2	20.4	11.1	3.8
Ludlum Steel Company	13.7	28.4	18.2	8.2	d2.0
Warren Foundry and Pipe Company	4.7	1.6	4.1	5.8	11.0
Youngstown Sheet and Tube Company	8.5	10.6	17.5	7.1	d1.7
Total	6.0	7.3	12.4	6.0	.9
Automobiles and Trucks					
Chrysler Corporation	87.0	36.9	27.5	4.0	6.9
General Motors Corporation	50.3	50.4	35.8	23.0	15.5
Graham-Paige Motors Corporation	d56.8	8.1	d8.6	d35.5	d37.8
Hudson Motor Car Company	48.5	46.3	34.8	1.1	d6.3
Hupp Motor Car Corporation	31.9	82.2	19.5	5.6	31.2
Mack Trucks Incorporated	27.4	28.7	33.1	74.5	-
Nash Motors Company	242.5	219.2	173.0	10.2	57.5
Packard Motor Car Company	40.5	65.8	64.6	24.4	d8.5
Peerless Motor Car Corporation	d18.5	d41.0	d59.7	1.9	d2.1

APPENDIX "H" CONT'D.

CORPORATIONS	1927	1928	1929	1930	1931
Automobiles and Trucks Cont'd.					
Reo Motor Car Company	45.5	46.3	13.2	17.9	d25.7
Studebaker Corporation	18.4	22.5	18.3	2.4	1.5
White Motor Company	d9.9	14.2	17.1	d29.3	d23.9
Willys Overland Company	19.7	15.0	d10.5	d18.3	d42.7
Yellow Trucks and Coach Manufacturing Company	d40.5	d5.5	6.4	5.8	d1.5
Total	43.4	45.0	32.4	6.0	.9
Textiles					
Cotton and Cotton Goods					
Consolidated Textile Corporation	10.3	4.7	.3	d16.2	d7.5
Nashawena Mills	5.7	d2.1	2.5	d3.9	d4.1
Naumkeag Steam Cotton	25.6	6.4	9.0	d8.7	d.8
Pacific Mills	8.2	.3	5.4	d8.6	d14.7
Pepperell Manufacturing Company	13.9	14.5	14.3	7.4	d7.4
Standard Textile Production	-	9.7	7.1	d5.8	d3.8
sub-total	10.7	4.2	6.0	d4.7	d8.7
Silk and Silk Goods					
Belding Heminway Company	27.1	d7.7	1.1	d65.8	d58.2
Blumenthal (Sidney) and Company	26.7	59.6	46.1	d2.8	.1
Century Ribbon Mills	3.1	2.7	d1.4	d8.4	8.1
Mallinson (H. R.) and Company	20.2	40.4	d26.8	d58.8	d23.6
sub-total	21.3	30.5	15.2	d27.5	d10.0
Wool and Woolen Goods					
American Woolen Company	2.6	d.7	d.7	d7.9	d7.8
Arlington Mills	d.6	d1.7	d7.8	d17.0	d8.4
Botany Consolidated Mills Incorporated	.9	d2.9	d11.2	d14.2	d17.4
Cleveland Worsted Mills Company	d.7	d9.0	d5.2	d49.9	d7.6
sub-total	1.5	d.9	d7.2	d12.5	d10.3
Total	6.2	3.3	d.2	d10.3	d9.6

APPENDIX "H" CONT'D.

CORPORATIONS	1927	1928	1929	1930	1931
Copper Mining					
Anaconda Copper Mining	6.5	10.5	14.1	4.5	.3
Calumet and Hecla Construction Corporation	5.4	12.8	18.5	3.0	d4.1
Cerro de Pasco Copper Corporation	11.4	19.6	16.8	d7.0	d9.9
Chile Copper Company	9.8	16.2	in Anaconda Copper		
Greene Cananea Company	1.1	3.8	in Anaconda Copper		
Howe Sound Company	17.0	21.8	31.0	17.5	-
Inspiration Consolidated Copper	3.7	11.8	15.3	2.1	d.6
Kenecott Copper Corporation	13.3	21.8	22.5	6.7	1.7
Magna Copper Corporation	18.0	51.6	85.8	43.8	6.7
Miami Copper Corporation	3.7	9.1	17.3	3.3	-
Nevada Consolidated Copper	10.0	25.5	28.7	3.1	5.7
Total	7.5	17.0	18.9	4.7	d1.4
Oil and Oil Producing					
Atlantic Refining Company	4.0	18.9	17.7	3.2	1.1
Barnsdall Corporation (Class A)	8.8	10.5	13.5	9.0	d5.7
Gulf Oil Corporation of Pennsylvania	7.6	16.3	16.8	4.7	d5.0
Houston Oil Company of Texas	6.4	5.0	4.6	4.6	.8
Humble Oil and Refining Company	6.8	16.8	24.3	14.2	3.2
Phillips Petroleum Company	5.8	8.2	13.3	3.0	d1.4
Pure Oil Company	3.8	7.8	4.4	2.7	1.5
Shell Union Oil Corporation	5.3	8.8	6.6	.4	d6.5
Simms Petroleum Company	1.3	4.1	19.1	d13.2	d29.5
Sinclair Consolidated Oil Company	4.2	7.0	6.9	8.0	-
Skelly Oil Company	5.2	11.1	13.1	5.4	d3.5
Standard Oil Company of New Jersey	6.1	13.9	14.2	5.2	1.5
Texas Corporation	11.0	17.2	15.7	6.4	d.9
Tide Water Association Oil	3.7	8.9	8.6	5.6	d2.9
Union Oil of California	7.3	7.6	9.4	7.4	3.2
Total	6.9	12.1	12.3	5.2	d.7

APPENDIX "H" CONT'D.

CORPORATIONS	1927	1928	1929	1930	1931
Chemicals and Fertilizers					
Air Reduction Company Incorporated	20.3	25.2	36.1	30.7	23.2
American Cyanamid Company	17.1	17.9	9.6	11.5	3.8
Atlas Powder Company	17.1	25.0	24.4	9.7	6.5
Columbian Carbon Company	17.2	21.7	22.0	13.4	8.5
Freeport Texas Company	56.8	51.4	64.6	68.9	48.1
Hercules Powder Company	14.1	17.1	20.9	11.6	6.5
U. S. Industrial Alcohol Company	11.5	19.2	20.3	4.8	d8.7
Texas Gulf Sulphur Company	194.9	138.7	107.1	78.0	48.3
Total	29.6	33.9	32.4	21.9	13.1
Machinery and Machine Equipment					
Allis Chalmers Manufacturing Company	10.4	10.4	13.4	11.3	7.2
American Machine Company	17.2	10.1	16.8	19.6	10.2
Bliss (E. W.) Company	3.4	9.1	15.8	.6	11.3
Caterpillar Tractor Company	66.6	55.1	58.3	47.1	1.8
National Acme Company	9.7	29.8	49.1	3.5	d26.1
National Supply Company of Delaware	39.0	31.5	35.2	11.7	d9.5
Seagrave Corporation	25.7	30.0	27.5	10.3	d5.9
Total	19.3	20.9	27.9	17.5	1.3
Building Equipment and Supplies					
Alpha Portland Cement Company	12.3	11.4	8.2	5.9	d3.8
International Cement Corporation	13.5	13.7	13.3	12.4	5.5
Warren Brothers Company	26.0	34.5	48.5	41.4	6.4
American Seating Corporation	28.0	21.1	17.9	10.8	d15.9
Celotex Company	17.8	28.2	21.6	6.4	1.9
Johns-Manville Corporation	23.5	24.0	25.0	12.0	3.3
Devco and Reynolds	30.7	22.8	23.5	2.9	9.4
Foundation Company	12.7	7.0	6.5	.3	d18.3
Sherwin-Williams Company	26.5	30.5	33.1	19.2	14.1
Total	18.9	19.3	19.8	12.9	4.3

APPENDIX "H" CONT'D.

CORPORATIONS	1927	1928	1929	1930	1931
Food Products					
Baking Products and Flour					
Pillsbury Flour Mills	26.6	22.9	23.4	18.3	14.5
Purity Bakeries Corporation	-	25.7	25.3	17.8	10.3
sub-total	26.6	24.8	24.8	17.9	12.3
Candy, Soft Drinks and Chewing Gum					
Coca-Cola Company	149.3	171.1	80.6	74.2	59.8
Hires (Chas. E.) Company	6.4	11.2	16.2	22.9	12.5
Sweets Company of America Incorporated	9.0	18.8	20.6	23.3	17.7
Wrigley(Wm. Jr.) Company	68.4	80.2	82.1	91.2	86.0
sub-total	78.6	90.7	73.0	74.5	59.2
Dairy					
Borden and Company	18.6	16.8	19.8	19.1	17.0
National Dairy Products Corporation	21.5	22.8	21.7	21.7	20.3
Southern Dairies Incorporated	4.5	6.3	13.6	4.6	1.3
U. S. Dairy Products Corporation	10.7	13.3	17.5	13.3	14.9
sub-total	18.1	18.7	20.4	19.7	18.0
Miscellaneous					
Beechnut Packing Company	43.5	56.2	49.4	46.3	44.6
General Foods Corporation	77.5	70.5	60.8	55.6	27.2
National Distillers Products Corporation	2.4	5.8	24.3	12.2	26.8
Quaker Oats Company	52.2	51.5	46.6	31.0	36.8
Wesson Oil and Snowdrift Company	21.5	25.8	17.6	25.0	18.9
sub-total	40.7	46.9	48.2	41.4	42.5
Total	34.4	31.6	30.8	27.8	26.0
Office and Business Equipment and Supplies					
Art Metal Construction Company	35.6	35.5	50.9	20.6	17.4
Burroughs Adding Machine Company	151.0	151.8	164.8	99.1	50.2
General Fireproofing Company	25.7	27.0	35.5	22.6	1.1
International Business Machine Company	51.9	52.5	47.4	43.2	40.5

APPENDIX "H" CONT'D.

CORPORATIONS	1927	1928	1929	1930	1931
Office and Business Equipment and Supplies, Cont'd.					
National Cash Register Company	47.0	42.2	33.8	14.6	3.5
Remington-Rand Incorporated	25.0	26.3	47.4	17.8	-
Total	48.5	48.8	54.3	32.0	30.5
Coal Mining					
Burns Brothers New Jersey	12.2	17.0	13.5	d11.8	d32.6
Elkhorn Coal Company	1.2	1.9	2.0	1.7	-
Island Creek Coal Company	26.1	21.3	24.4	19.0	12.5
Lehigh Coal and Navigation Company	6.2	5.4	5.8	5.5	4.5
Pennsylvania Coal and Coke Corporation	d7.1	d4.9	1.9	.1	d3.1
Philadelphia and Reading Coal and Iron	d5.4	2.7	1.6	4.0	4.6
Pittsburgh Coal Company	d.1	.8	1.2	.5	d.5
Pittsburgh Terminal Coal Corporation	4.2	d4.2	d3.2	d3.1	d4.0
Total	.5	2.5	3.1	2.5	1.5

The above ratios for the individual corporations were taken from the "Base Book Standard Earnings Bulletins" of the Standard Trade and Securities Service. The ratios for the industries were computed by dividing the net profit of the corporations making up the industry by the net property accounts plus any long term investments of these same corporations.

The thesis, "Financial Ratios in a Period of Falling Prices," written by Sylvester M. Frizol, has been accepted by the Graduate School of Loyola University with reference to form, and by the readers whose names appear below with reference to content. It is, therefore, accepted as a partial fulfillment of the requirements of the degree conferred.

Dr. Arthur M. Murphy

May 6, 1933

Dr. Peter T. Swannish

May 4, 1933